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# THE BRICKBVILDER

OCT. 1902

H. F. B.

## THE BRICKBUILDER.

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## ADVERTISING.

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Advertisements will be printed on cover pages only.

WE received a call the other day from a young man seeking a situation as a draughtsman, who announced as one of his strong qualifications for the position that he was a graduate of the Mechanic Arts High School. We have the greatest respect for the work which has been accomplished by the high schools of this description which have sprung up so numerously in our larger cities within recent years. They are to be encouraged in every respect and the men they turn out are usually a credit to the institution from which they graduate, but to assume that such schools are intended to turn out architects is, in our opinion, to entirely misunderstand the aim of such establishments. In all of these we believe a certain amount of architecture is taught in more or less detail, and quite rightly, but the curriculum is, or at least should be, planned with the idea of making educated, intelligent mechanics rather than architects. The paths of study of the builder and the architect overlap at times and each has need of some portion of the training specially devised for the other, but it is not being fair to our young men to let them imagine that the training they can obtain in the Mechanic Arts School is such as could properly fit them for the practice of architecture, unless it is supplemented by a course of study at one of the regular architectural schools. Architecture is an extremely fascinating profession and the architect occupies a position which might strongly attract a young man who has his own way to make in this world. We frequently find such whose ambition is larger than their pocketbooks undertaking to follow the evening courses of the high schools and hoping, having graduated therefrom, to work into the profession through the routine of the draughtsman's work. But we feel that it is no more than fair to such young men that they should be plainly told of the unlikelihood of their achieving any measure of success in architecture without architectural training at a regular architectural school. The way is long, tedious and costly, but the time has gone by when mere ambition and willingness to work can lift one to an honored position in the profession unless it is accomplished by a thorough and fundamental training. The Mechanic Arts High Schools are not for architects. We believe a young man will waste his time going to these schools as compared to attendance at one of the architectural colleges, and the practicing architect who every week has to encounter young men who are anxious to begin the strife which for years has absorbed so much of his energies is doing nothing but a kindness when he paints in the strongest colors the absolute necessity of architectural school training.

THE country is certainly to be congratulated upon the move which has been made at Washington to adequately equip and furnish the Presidential Mansion. The work has been most thoroughly designed by McKim, Mead & White and it is being carried out in a way which insures its being lasting in its character. The President lives in the White House only during his term of office, and apparently never before has a President felt enough personal interest in the building to have it put in proper order. The dignity of the office requires that the nation should have a suitable official residence for its head magistrate. The changes which McKim, Mead & White are making, while extending even to fundamental matters of construction, leave the essential characteristics of the White House untouched. It is not generally understood that the present front entrance of the mansion was originally intended as a service entrance, the idea being to have the house face on the magnificent lawn which sweeps down towards the Monument. Questions of convenience and the development of Pennsylvania Avenue have reversed conditions somewhat, but the present alterations are intended to in a measure revert to the original arrangement. It is interesting, by the way, to note that the legend of the White House being copied from some manor house near Dublin has been definitely exploded. Mr. McKim, we have been told, has had a number of photographs taken of the reputed prototype of the White House, which show a very different structure from the Presidential Mansion.

# The Crematorium.

BY JOHN W. CASE, R. S.

THE design for a crematory which is here illustrated is intended to be an example of the æsthetic use of scientific building construction, in forms peculiar to metal and burnt clay, freed from archæological influence. The building material throughout is incombustible; the framework of metal covered with burnt clay fire-proofing; the walls, ceiling and floors finished in tile, marble or cement, affording no lodgment for germs and permitting frequent cleansing. The exterior of this crematorium consists of glazed burnt clay products, colored delft blue and white.

In plan the design contemplates an advance on present methods of incineration, for the building is planned for a process which will reduce the body to a sanitary condition for earth burial at a maximum time of thirty minutes. The hearse drives into the basement of the building, the body is removed and placed in the receiving room connected with a pharmacy and a room for autopsy. Delicate electrical tests are here made to detect suspended animation. The body is then placed in a vault awaiting the time of incineration, or the relatives and pallbearers attending in the waiting-room proceed with the body to the chapel where the friends of the deceased are assembled. Here the body is placed in the upper part of the incinerator in full view of those assembled in the chapel. The incinerator is then closed, so that the actual process of incineration is not seen. During the funeral service the incineration is completed, and at its close the remains, enclosed in a small metal receptacle, are removed from the incinerator in full view of the chapel so there can be no question as to the identity of the ashes, which are at once placed in the columbarium or committed to the earth in the beautiful grounds surrounding the crematory, thus obviating the doubtful practice of removing the ashes of the deceased to a private dwelling. As this crematory is designed to prepare the body for a sanitary earth burial in place of the horrible earth burial as now practiced, it is not necessary that the calcareous parts be reduced to a powder. The body thus returns to nature whence it came, and the crematory becomes a temple dedicated to eternal life.

The development of cremation is not due to sentiment, but is the result of necessity. The practice of burying the dead is a relic of barbarism. Placing the body in the ground to undergo the revolting process of decomposition is an indignity to the dead and a source of deadly contamination to the living. That the cemeteries are breeding places of disease was recognized in Europe about 1800. The danger of burying the dead was realized and the necessity of cremation became apparent. One of the earliest crematories in Europe was built at Milan, Italy, in 1874. Now nearly every important town in Italy has a crematory. The first modern crematory in Germany was built at Dresden in 1874. In Paris the crematory at Père la Chaise was built in 1887. The first crematory in the United States was built at Washington, Pa., in 1876. In 1900 there were 24 crematories in the United States. From 1876 to 1883 25 cremations took place in the United States. In the year 1900 2,414 cremations took place in the United States. These figures show a large percentage of increase, but it is surprising that the increase is not larger. The reasons are simple. Few people realize the horrors of earth burial and few understand but vaguely the process of cremation. The custom of earth burial has been established for hundreds of years. People hesitate to change the custom of earth burial and dread to take active means which change the form of the dear departed, although a most horrible change takes place from earth burial. If resurrection of the body is to take place in the exact likeness of its earthly form, still resurrection is a miracle, whether from dust of the earth or ashes of cremation.

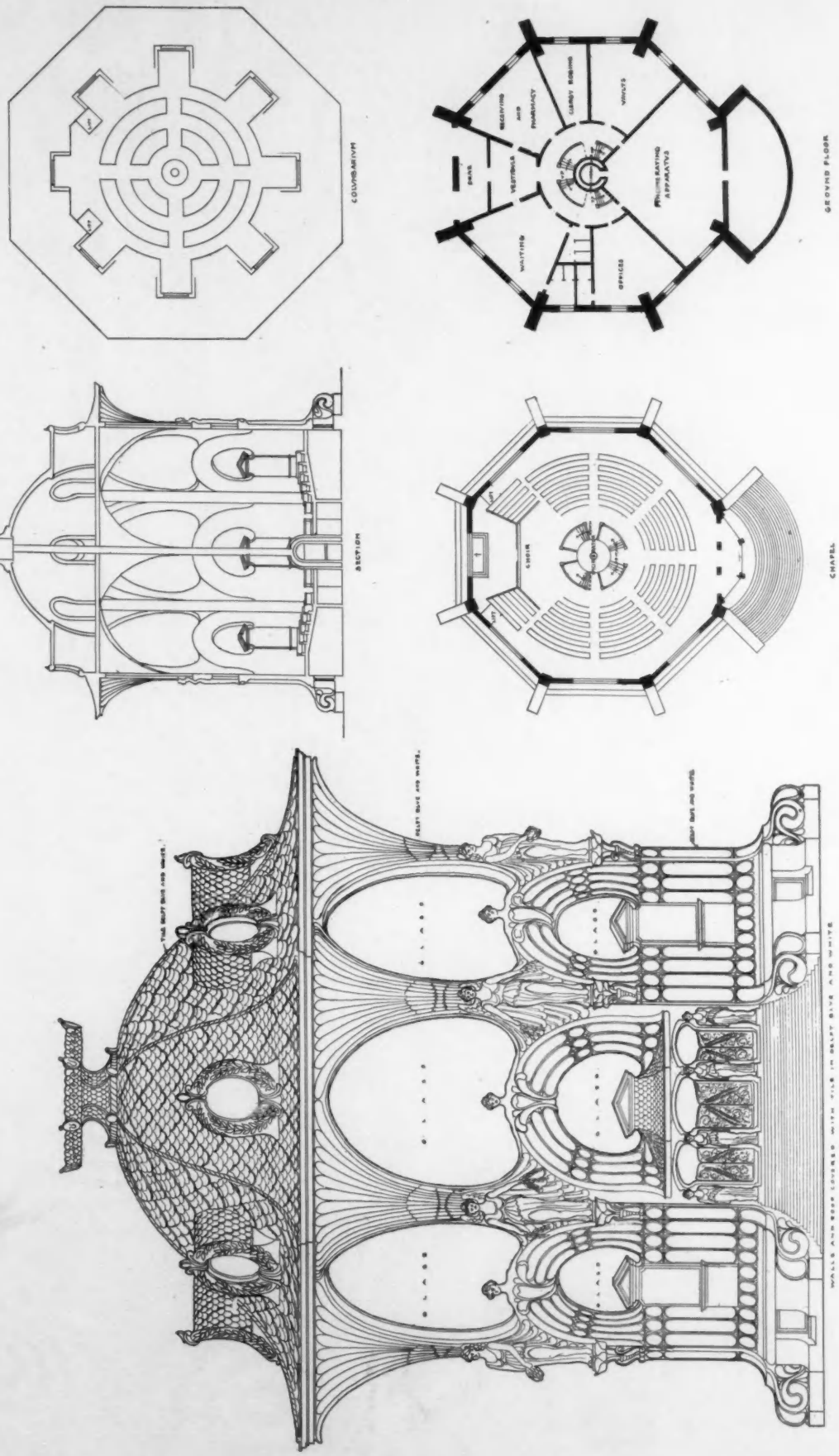
Modern cremation dates from about 1870, but cremation has been practiced by all races of people from the most ancient times. The Egyptians, Greeks, Romans, Chinese and other nations of antiquity practiced cremation by means of the funeral pyre, a primitive and barbarous method, which was alternated according to the belief of the ruling class from cremation to earth burial or embalming. In Greece the origin of cremation was due probably to the custom of burning the dead on the field of battle.

In both cremation and earth burial the process is one of burning: in the earth slow, repulsive, dangerous; in cremation, quick, scientific, sanitary. In cremation the intense heat causes oxygen to unite with the carbonaceous elements of the body; the resulting carbonic acid gas, ammonia and water are driven out into the air. In the retort are the ashes, pure oxide of lime. Thus the elements of which man is made are quickly and decently returned to the source from which they came, clean and pure. The water ascends to the clouds, while the ammonia and carbonic acid return to the soil to nourish the plant. The lime remains to be returned to the earth.

It hardly seems possible that earth burial can continue, but the love of the cemetery, the hallowed spot, occupies the mind and glosses over its real character. It is the family burial place, with its green mounds shaded by drooping boughs casting shadows across the gray stones inscribed with revered names. Religion, poetry and custom hallow for us this quiet resting place, emblem of eternal repose. Many a man has turned back to a better life, animated with hope and high resolve after such a visit. But if the mind's eye should penetrate beneath the flower-strewn sod to the festering mass below, what a revolting contrast would result! Let us keep this sacred, hallowed spot, but let us dispel its pestilential horrors and make it a worthy place of eternal rest by placing there the pure and wholesome ashes after purifying the body with the cleansing fires of cremation.

The method of cremation must be improved, the time shortened. Before cremation becomes a universal custom several of its present conditions will undoubtedly be modified. Although the time required for complete incineration has been reduced from four hours at the Washington crematory, the first one built in America, to one and one half hours, the time required by a modern incinerator, the time is still excessive, but with the perfection of new systems the time will probably be reduced to an outside limit of thirty minutes. It does not seem necessary to reduce the mineral parts, the bones, to a powder.

Earth burial should accompany and supplement cre-




DESIGN FOR A CREMATORIUM. John W. Case, Architect.

mation. The practice of placing the ashes in urns to be taken to the dwelling of the relatives or to be placed in a specially constructed building, the columbariun, is subjecting these remains to the possibility of indignities, due to the vicissitudes of fortune, the change of the dwelling place with its consequent confusion. The columbarium itself may outlast several generations, but cannot be permanent, and ultimately the ashes will return to the earth, where indeed they belong. How much more fitting it seems to lay the ashes at once in the earth, with appropriate ceremony, where they may resume their functions in nature's system.

The idea of burning, the annihilation by fire, is an extremely repugnant and painful one, which should be replaced by the idea of chemical change. The words incinerator and incineration are not so vividly suggestive of flames, but still embody the idea of burning. Crematory and cremation are words sufficiently abstract. Some new process of chemical dissolution may furnish better terms to characterize the process, as, for instance, vaporization.

In nearly all modern crematories the body is lowered through the floor of the chapel in which the services are held to the incinerating chamber below. Although a glass plate in the incinerator allows the process to be seen by a few persons, still there is the possibility of a doubt in the minds of the persons who remain in the chapel as to the identity of the ashes. The incinerator should be placed in the chapel itself where all present may see the body placed in the incinerator and the ashes removed therefrom, although the actual change of form of the body should not be seen.

### DATA.

The modern crematory furnace requires about six hours of heating to generate sufficient heat for the incinerator, between two thousand and three thousand degrees Fahrenheit. The time required to incinerate the body varies according to the weight, from forty-five minutes to one and one half hours. The amount of fuel varies in the different kinds of furnaces. The Davis furnace at Lancaster, Pa., requires for an incineration two hundred and fifty pounds of coke and two hundred and fifty pounds of anthracite coal. The remains of incineration, which consist of pure oxide of lime, calcined bones, weigh from four to six pounds. The average charge for an incineration in America is twenty-five dollars. At Père la Chaise, Paris, the actual cost of an incineration, after the furnace is heated, is sixty to eighty cents.

### SYSTEMS OF INCINERATION.

The European systems of incineration are more expensive in construction than the American. The principal ones are the Gorini and the Venini. The Gorini system uses an artificial bath of lava in which the body is consumed. The resulting ashes are lighter than the lava and float on the top. The Venini system is used at the Buffalo, N. Y., crematorium. The time required to heat the furnace to twenty-five hundred degrees Fahrenheit is one and one quarter hours. The body is consumed in about one hour. The fuel required, one half cord of wood. The process consists of two operations — the generation of gas and the cremation. The gas generator, A, located in the basement, is a fire pot four feet high and two feet wide. Air for combustion is admitted at the bottom, where the small fire distills the wood above. These gases pass to the rear end of the incinerating chamber, B, where they meet heated air from another chamber and are ignited at the point of union by an auxiliary flame. The Bunsen flame thus made is projected across the incinerating chamber, thence by the flue F it passes to a chimney and is again burned by an auxiliary Bunsen burner in the flue and in the chimney. In this system the flames come in direct contact with the body wrapped in an alum cloth. The Schneider system used at Cypress Lawn Cemetery, San Francisco, and at Hamburg, Germany, is similar to the Venini.

At Mt. Auburn, Cambridge, oil is used for fuel. It is blown in a fine mist into the chamber, where it burns readily, the heat being intensified by the addition of air under a pressure of eighteen ounces. A temperature of three thousand degrees Fahrenheit is obtained. To insure the complete combustion of all the gases from the body they are forced into a second chamber where the burning is duplicated. The power to force in the air and oil is obtained from an electric motor in a subcellar forty feet from the incinerator, so that no noise of active operation may be heard.

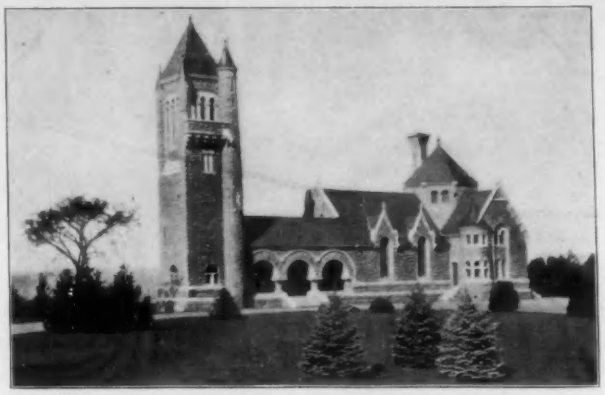
The Davis system is used at Lancaster, Pa. The furnace is constructed of fire brick. Outside dimensions, 10½ x 6½ feet. Cost of furnace, $1,200 to $1,500. The flames do not come in contact with the body. The chimney projects but a few feet above the roof. Combustion is complete. No injurious gases are given off.

In all these systems the time required to incinerate an adult is about one hour and a half, which is too long by half. The body, too, is almost invariably lowered from the chapel to the incinerating room, where the process can be seen by few.

The discovery of liquid air gave promise of better results. Liquid air is to be used as a means of obtaining liquid oxygen, which, injected into the electric furnace, greatly increases the intensity of the furnace. As liquid air vaporizes, the nitrogen and other gases evaporate first, leaving the oxygen to be brought into the incinerating process. Combustion under these conditions would be very rapid.

### REQUIREMENTS OF THE INCINERATOR.

There are several important considerations in regard to the construction of a furnace. It must be built economically and also must operate economically. The walls should be built to retain the heat, that no loss may be sustained by radiation. They must also sustain the great strain of alternate heating and cooling without dislocation. The furnace should be able to incinerate several bodies at the same time, keeping the ashes separate and allowing for their removal, so the furnace may be operated continuously, for the initial heating requires most of the heat. After the furnace is heated, but little fuel is required for the incineration itself. Combustion must be complete so that no poisonous gases or smoke may escape into the atmosphere. The incinerator should be located in a chapel so that all present may see the body placed in the incinerator and the ashes removed, that no doubt may arise as to the identity of the remains. The actual disintegration of the body should not be seen.



THE GARDNER EARL MEMORIAL CHAPEL AND CREMATORIUM, TROY, N. Y.

A sheet soaked in alum water will retain its shape until disintegration is complete.

TYPES OF CREMATORIES.

There are several types of crematorium plans. The Buffalo crematory is a church plan. The preparation room, B, is located at one side of the chancel, C, and the incinerating room, D, at the other side of the chancel. The body is placed on a car, G, is rolled into the chancel, where the service is said, and then rolled on into the incinerating room. The congregation are seated in the body of the chapel, A. The building is 70 x 60 feet, built of stone, picturesque roofing. It is a stock company, capitalization $15,000.

In both the Milwaukee crematory and the crematory recently finished at Montreal, a conservatory for plants is one of the main features. At Milwaukee there are two conservatories, one at each end of the chapel, so arranged as to form part of the chapel by moving a glazed partition. At Montreal the conservatory is the principal part of the design. It is built of steel and glass,

RECEPTION ROOM — SHOWING INTERIOR OF RETORT, GARDNER EARL CREMATORIUM.

82 x 41 feet. It is used as a waiting-room and connected to the crematory by an antechamber.

The New York crematory is surmounted by a dome which admits light and also serves as a columbarium. The first and second stories open into one another and are encircled by a gallery.

In the crematories at San Francisco, cement and tiles have been extensively used. The floors are cement covered with rubber matting; the walls are covered with glazed tiles, which form a good substitute where the more expensive construction cannot be used. A crematory for contagious disease is built in connection with the San Francisco crematory but entirely separated by a brick wall. The floors, walls and ceilings are of cement. The columbarium built in connection with the San Francisco crematory is in plan a Greek cross, the ends of the arm connected by two concentric circular walls. The con-

INTERIOR OF CHAPEL — LOOKING SOUTH FROM CHANCEL, GARDNER EARL CREMATORIUM.

struction is of steel and cement, the walls completely indented with niches for urns, reached by stairs and galleries.

The St. Louis columbarium has the receptacles for urns along the walls. A marble wainscot five feet high is divided three feet above the floor by a horizontal slab, vertical divisions three feet apart, from compartments within which are small vaults. The largest ones at the bottom lease for ninety-nine years for $100 to $150; the ones above, $45 to $60. Stairs and galleries give access to similar smaller compartments surfaced with oxidized bronze. These lease from $25 to $40. The basement is fitted with japanned metal shelves which lease for $10.

REQUIREMENTS OF THE CREMATORY PLAN.

An auditorium or chapel where the funeral oration or religious services may take place, capable of seating three hundred to five hundred people; with organ, choir seats, altar, robing rooms, etc.

Incinerator located in the chapel, where it can be seen, and connected with apparatus and fuel rooms below.

Waiting-rooms connected with chapel and with toilet rooms.

Vaults where the body may be kept awaiting the time of incineration.

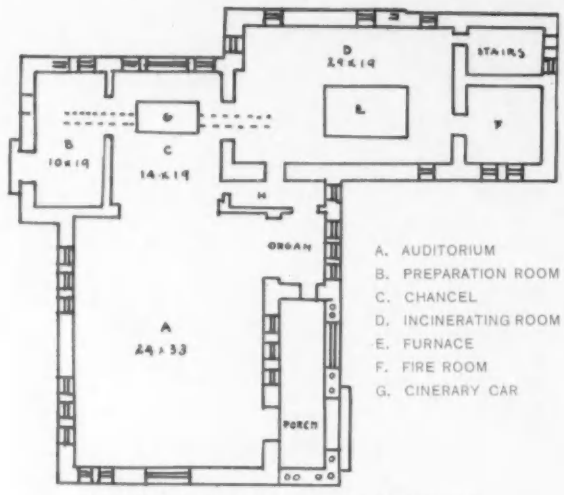
Receiving room connected with pharmacy and provided with delicate apparatus for detecting suspended animation and administering restoratives.

Dissecting room where autopsies may be conducted to discover poisoning cases, etc.

Office for registration, payment of fees, etc.

Power plant, at a distance that no noise may be heard, to furnish power for heat, light, forced draught, etc.

The system of construction should be fire-proof, at least in all parts of the building in immediate connection

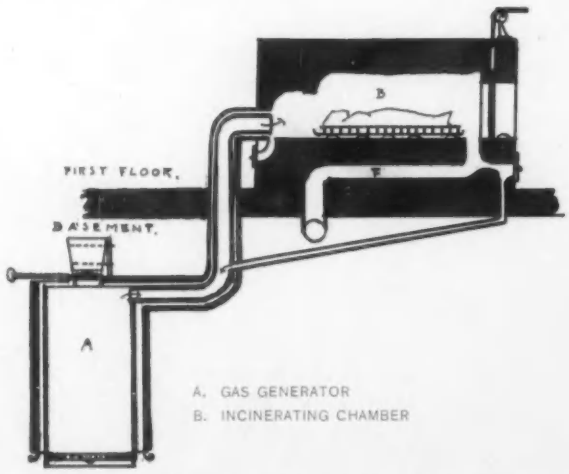



GROUND PLAN, BUFFALO CREMATORIUM.

with the furnace, and it should be sanitary, allowing no lodgment for disease germs, and admitting frequent and convenient cleansing and disinfecting. The ceilings, walls and floors should be marble, tile or cement; the floors should be covered with rubber tiling to prevent noise. All operations should be noiseless, signals being used to obviate talking by the operator.

Space should be allowed for additional incinerators due to increased demand.

In connection with the receiving room a courtyard or enclosed part of the building might be arranged into which the hearse enters before removing the body, thus securing privacy and protection from the weather.

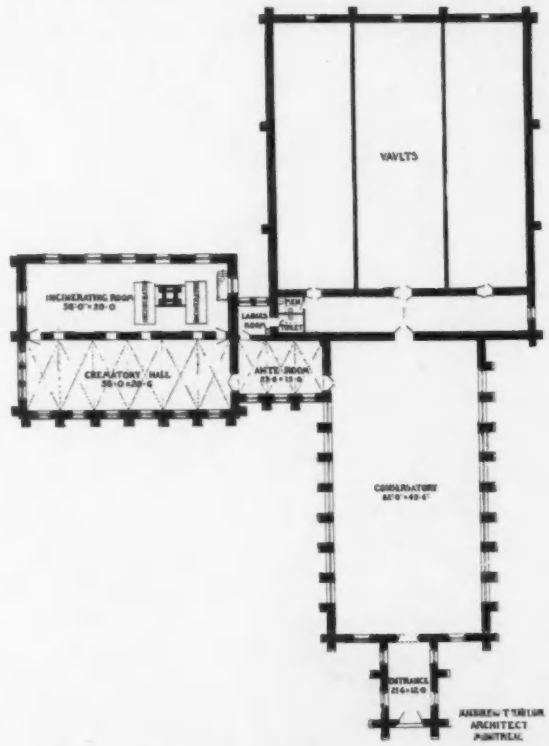



FURNACE OF THE BUFFALO CREMATORIUM, VENINI SYSTEM.

The body, properly prepared at the house, should be free from further handling, subject, however, to the tests for suspended animation. No preparation of the body could take place until the physician's certificate of cause of death had been procured. If incineration is not to take place immediately, the body so soon as received should be placed in a strong vault where it may remain in absolute security. The responsibility of the undertaker ceases when the body is received in the crematorium, which must be in charge of a thoroughly efficient officer.

The architectural form of the crematory must express the character of cremation, not in gloom, not in repellent somberness, but with hope and confidence in a new and higher life.

Sorrow at parting with the physical form of the loved ones is to be replaced with consolation of the spirit freed from its physical infirmities. The crematory cannot be a mere burning place; it must be a sacred temple dedicated to the eternal resurrection, scientific or theological, still one in essence.




PLAN, CREMATORIUM, MOUNT ROYAL CEMETERY, TORONTO, CANADA.

Such a building cannot be placed brutally on an open street subject to the vicissitudes of every passing accident. Embowered in its sacred enclosure, approached by a dignified and monumental way through lawns where repose the ashes of former generations, its noble and beautiful walls enriched with tablets commemorative of the illustrious dead, the crematorium becomes a hallowed place incentive of great and noble aspirations and an emblem of the life eternal.

BIBLIOGRAPHY.

For a very complete account of cremation see Dr. Hugo Erichsen's "Cremation of the Dead." Detroit: Haynes & Co. For a description of crematories, statistics and bibliography see "A Quarter Century of Cremation in North America," by John Storer Cobb. Boston: Knight & Millet.

## The Interesting Tile Work of "Dreamwold."

FIREPLACE tile are usually one of three varieties, — unglazed, bright glazed or those having a dull glaze on surface. Of these the unglazed tiles have generally the same material throughout. Among these may be included the brick facings and tiles made in the shape of bricks. The bright tiles would include plain tiles and those having a pattern stamped from an iron die and baked to a biscuit. The glaze or surface to either of these varieties would be applied afterwards and the entire tile baked until surface material is fused to the under tile.

There is, however, no reason why this modeling should not be done by hand and the quality of the workmanship bettered, but the question of glaze is another matter, for the hard glassy surface rarely seems to fit into the home, but to stand out bright and staring instead of remaining in the plane of the fireplace.

In the dull glazed tile these objections are removed and the surface of the facing seems to form a part of the adjacent walls and to rest within its fireplace framing as though perfectly contented. Such a tile with its dull surface resembling the pile of a velvet with all its deep tones, in mossy green, warm gold, deep or cool blues, grays and purples, has been for several years used extensively in the better class of work, but in Dreamwold, the farm of Thomas W. Lawson, Esq., at Scituate, Mass., the architects have tried to get away from this conventional treatment.

For the dining-room fireplace an excellent model was made by the sculptor, Russell G. Crook, and then most wonderfully glazed by the manufacturer. A word as to the design of the room that contains this facing may be in order. The walls are paneled to the ceiling and have a color resembling sandalwood. On these panels are painted conventionalized bunches of grapes, ears of corn and other farm products. The chandelier is a huge pumpkin, and the breakfast alcove chandelier and also the wall brackets are made up of pumpkin blossoms and leaves in their natural colors. To harmonize with this the fireplace facing starts on each side with a huge golden pumpkin on a very dark blue background. On this background the vine wanders over the top with its green leaves and bright yellow blossoms and even flows out on to the hearth with a few leaves that seem to keep the pumpkin just where it was intended to be. By means of these dull tones the fireplace, although singing in the highest tones of yellow and green, still remains a fireplace, facing on the same plane as the wall paneling and embracing the two huge bears by Crook that form the andirons.

Particular mention is perhaps due to this facing because it marks a new era in tile work, — the introduction of hand-molded and hand-decorated work in high relief, in what has up to this time been occupied by the plain tiles or a highly glazed machine product.

The facing of the living-room fireplace shows a grapevine in relief on a light gray-blue background with purple grapes and green leaves, while two small bunnies are playfully introduced near the floor.

In the library and other rooms of the house a different phase of tile work is introduced which can be best compared to the Japanese cloisonné ware, which is made on a copper background with little rules or cloisonnés of copper separating the different parts of the design. Into these various spaces formed by the cloisonnés is poured the enamel, and these lines keep the various colors each in their separate compartments and form a golden line between them. The manufacturers have taken this idea and have applied cloisonnés of the tile material to the biscuit tile. In between these lines all painted in flat tones are the colors that form the pictures. The effect of the heavy lines is most interesting, and in some ways they resemble the strong outline of a Dürer print.

Just in front of the first pair of oxen shown in the library fireplace can be seen five different planes of landscape and these all stay in their proper relations to each other, and despite these planes the facing is a purely mural decoration which stays on the wall like a Puvis de Chavannes.

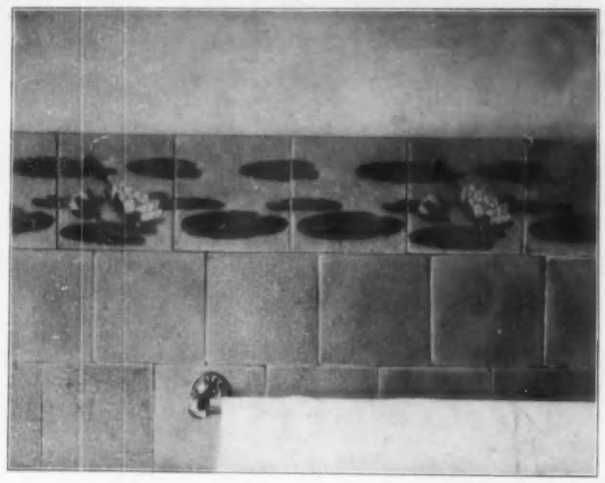
The fireplace having the design of a tree on the left-hand side, with the river winding back of it, is by Vesper George and shows a wonderful distance from the immediate foreground to the deep purple mountains with the cloudy sky beyond. Another of Vesper George's designs is the one representing the spinner and the nurse. Another is a half-burnt candle in a green candlestick on a gray-green background, and still others represent haycocks and apple trees.

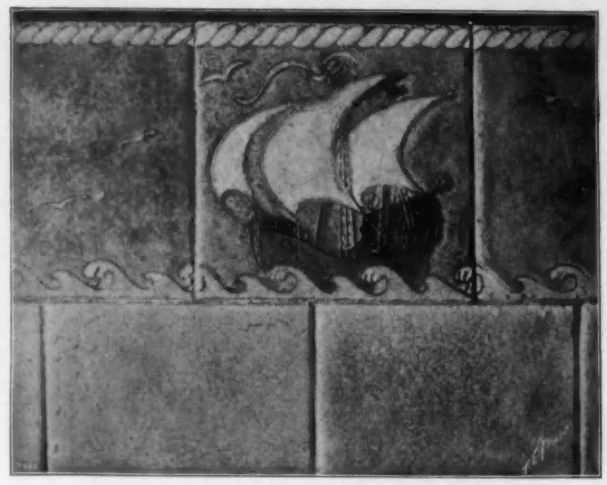
One of the most interesting features of the house is the tile decoration of the bath rooms and the conservatory that are tiled up about four feet high with specially designed cappings. One of these designs represents a line of turtles walking on the golden sands of a tropical desert, while over them hangs rather primitive leaf work in green. Another bath room has a line of galleons separated by tiles whose only decoration is formed by a few gulls flying over the conventional water, in a lighter tone of blue than the blue of the background of the ships. One of the most effective patterns is formed by three separate tiles which make an interchangeable pattern of water lilies so that the flowers themselves can be put at the most interesting points on the wall and the filling formed by the plain green lily leaves on a gray-blue water which forms the wall tile. Another bath room shows the tulip in alternating purple and yellow blossoms, with the leaves and background in two shades of green; still another has a more or less Persian ornament in purple, yellow and green; while the owner's own bath room is a never ending procession of horses, as a suggestion of Dreamwold's hundreds of horses, on a light blue background, with the walls and floor of a green tile.

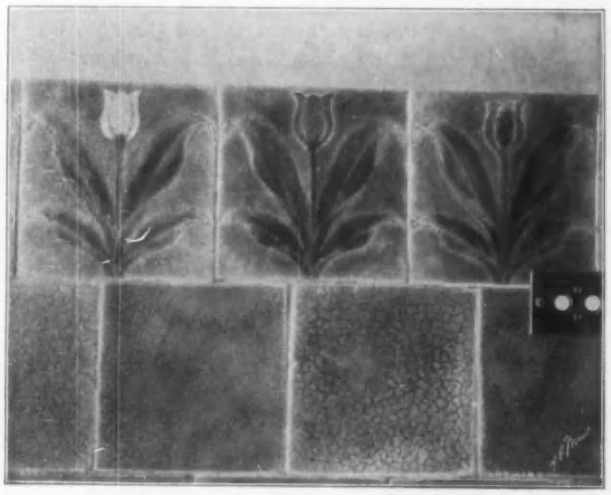
Floors of all these bath rooms are in the same tile as the walls except that they are very much larger and that the conservatory has a gray floor tile without glaze.

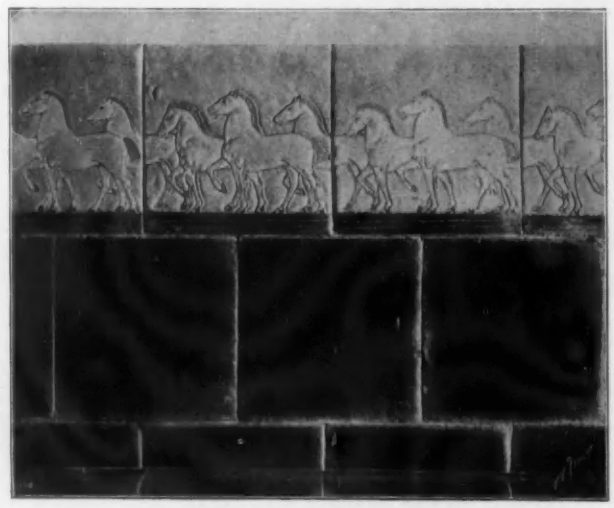
The tile work in the bath rooms is not more expensive than the best quality of white tile and is far more beautiful. The designs for the caps are all made especially for the place, and as these were in repeating patterns with few variations the cost was not excessive. The mantel facings vary in cost a great deal and it is impossible to give any schedule, but it may be safely said that they are not too expensive for the better class of houses.

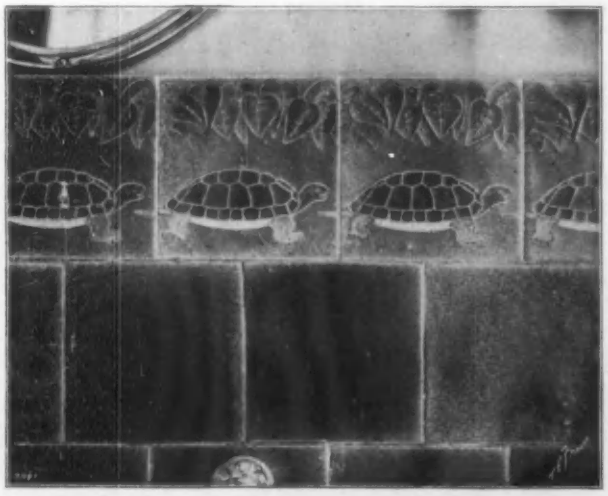
This entire work was executed by the Grueby Faience Company. Coolidge & Carlson were the architects.

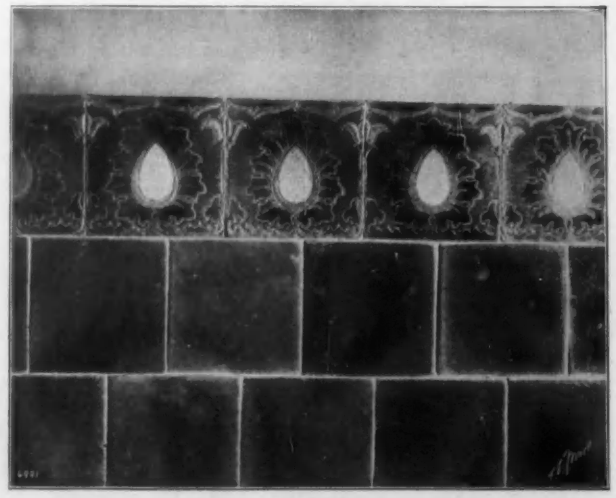




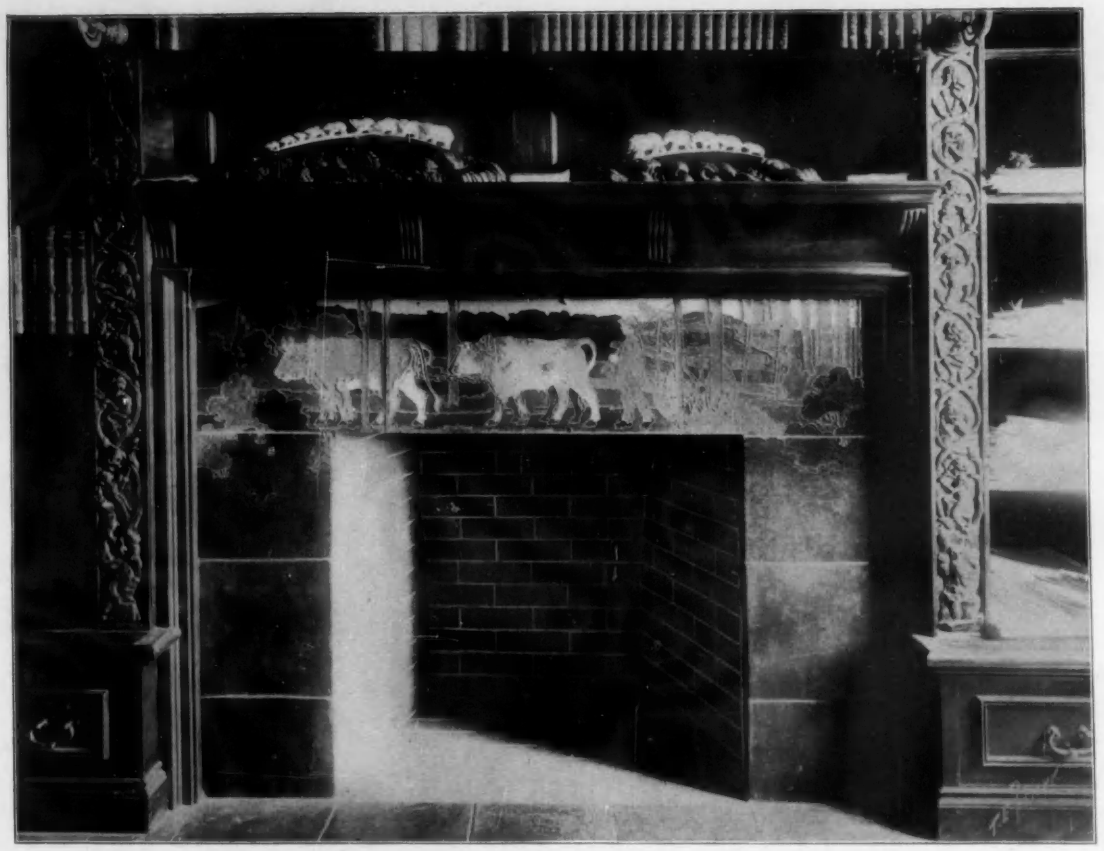




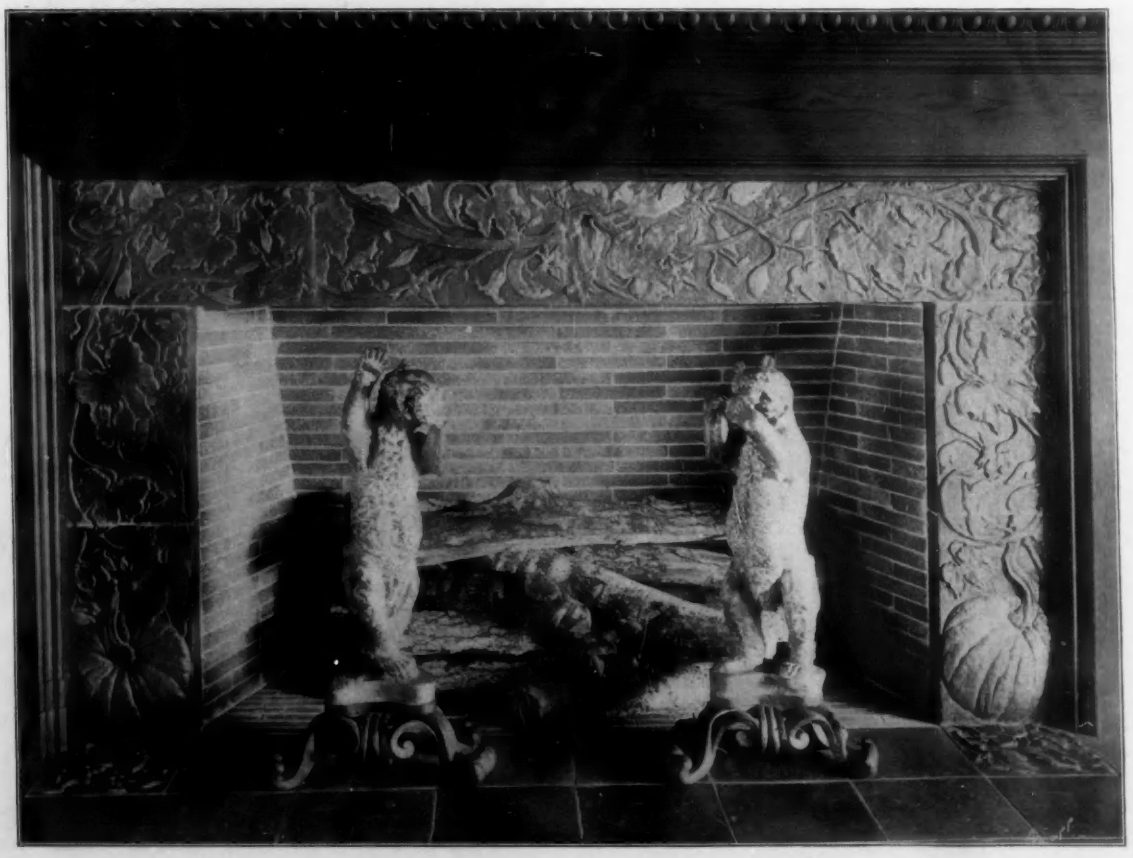




DETAILS OF TILE WORK IN BATH ROOMS, FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.
Coolidge & Carlson, Architects.



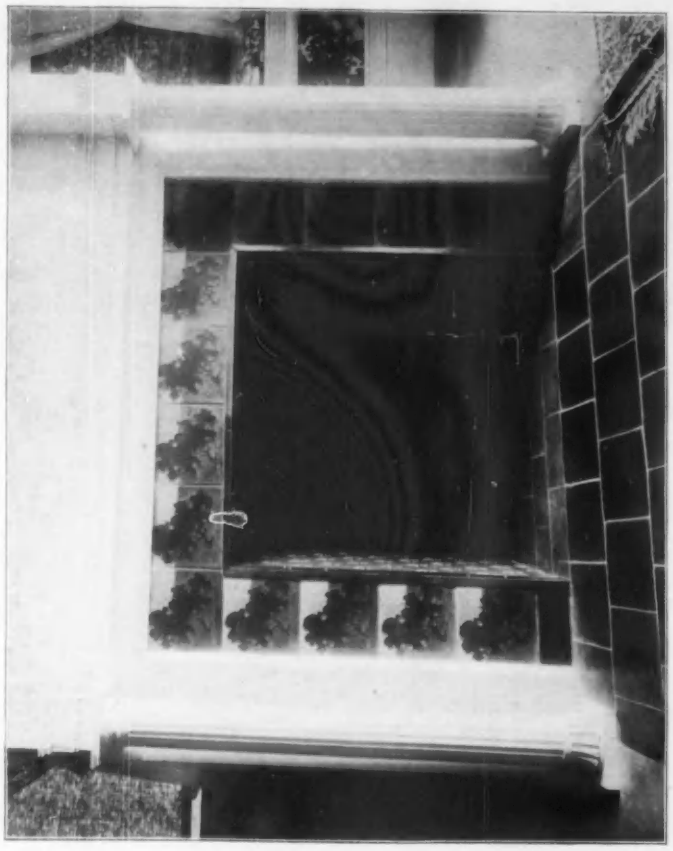
MANTEL IN LIBRARY.

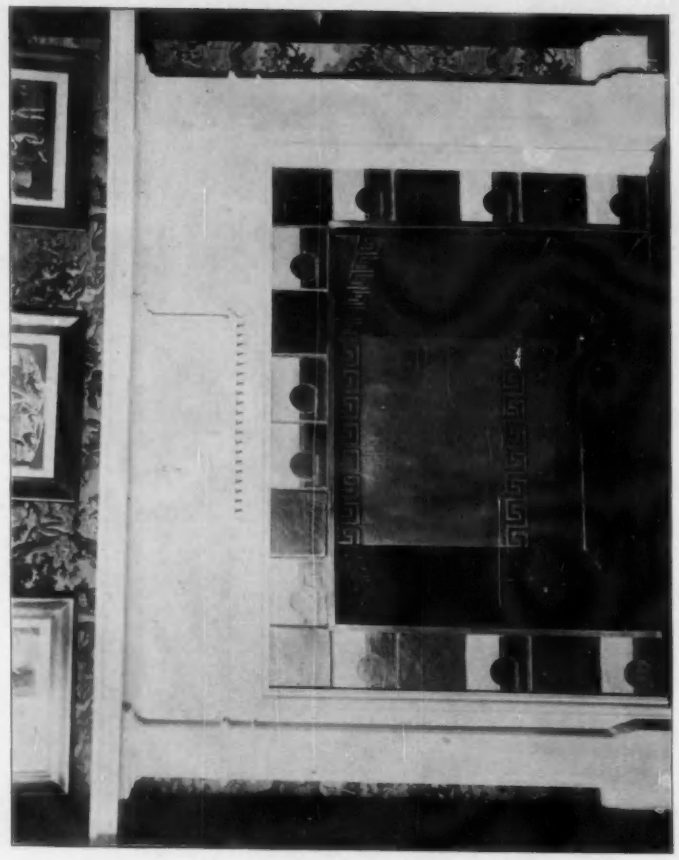


MANTEL IN DINING-ROOM.

MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.

Coolidge & Carlson, Architects.









MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.
Coolidge & Carlson, Architects.

MANTEL IN CHAMBER.

MANTEL IN LIVING-ROOM.

MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.
Coolidge & Carlson, Architects.

# Interesting Brickwork in Buffalo.

## MUNICIPAL BUILDINGS, INSTITUTIONS, MERCANTILE BUILDINGS AND CHURCHES.

BY ULYSSES G. ORR.

THE larger buildings of Buffalo are almost entirely of brick, there being but one or two of stone in each of the various classes and but few of all terra-cotta. Brick seems to be the building material preëminent. It is used in the smallest as well as in the largest buildings; none are too good for this material, none too poor. It is the building material of the aristocrat as well as the plebeian, and no wonder; brick can be obtained of any desired color

FIDELITY TRUST COMPANY'S BUILDING.
Green & Wicks, Architects.

and of any texture, from the rough, multicolored wash brick through the various grades of pavers to the smooth, close-grained, even-toned brick, or it may be had enameled in any color, with a "wash its own face" surface admirable for some purposes. Buffalo has them all, and a pleasing variety they make.

The newest important municipal building in Buffalo is the Lafayette High School, from designs by Esenwein & Johnson. The detail of main entrance shows the character of the brickwork admirably. A golden-brown Roman brick, with brownstone and terra-cotta trim, was used.

Some clever brickwork is shown in the Public Bath, from plans by Lansing & Beierl. The Morgue, by the same architects, is a combination of brown sandstone and red brick, and would have been much more attractive had the same design been carried out entirely in brick.

The building for Chemical No. 5, planned by E. A. Kent, is a simple and satisfactory example of brickwork in which a standard red brick and red mortar joint were used.

The casino and boathouse at Delaware Park is from plans by Green & Wicks and is laid up in very light cream brick, which, with the red tile roof, has a very pretty setting in the green foliage.

The institutions of Buffalo are almost entirely of brick, and many of them are decidedly interesting.

St. Vincent's Female Orphan Asylum, from plans by Green & Wicks, shows some beautiful brickwork. A standard-shape brick of good texture was laid up in white mortar, with stucco work in the attic story, producing most satisfactory results, as may be seen clearly in the detail views.

The right wing of the Buffalo General Hospital, from plans by George Cary, shows some interesting brickwork in a light buff brick, and gives promise of a very interesting building on the completion of the other wings.

The Buffalo Public Library, designed by Cyrus Eidlitz, is a highly satisfactory job of brickwork done in brick of standard shape.

The Grosvenor Free Library is also in brick and is from plans by R. A. Waite.

The Buffalo Catholic Institute, designed by Metzger & Greenfield, shows some satisfactory brickwork in a light mottled, warm buff brick.

Some very interesting brickwork is shown in Buffalo's medical college, the University of Buffalo and its branches, the Gratwick Laboratory and the Dental School, all from plans by George Cary. A chocolate-colored wash brick of beautiful texture was used in the main building, shown nicely in the detail of main entrance, and pavers, with plenty of variety of tone, were used in the Laboratory and Dental School.

Only a few of the mercantile buildings can be included in this article, space not permitting of a fuller representation, and the larger buildings have been omitted as being hardly suitable for reproduction at the small scale necessary.

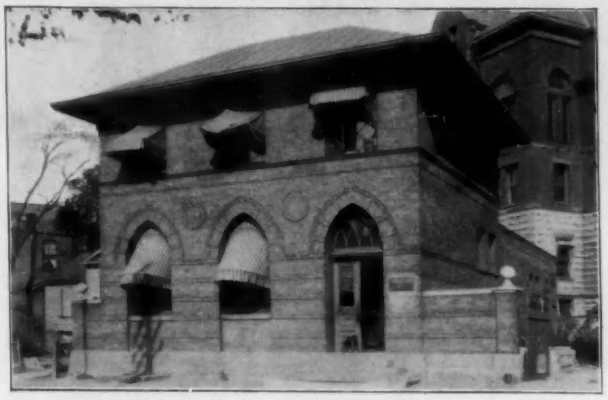
One of the newest of these buildings is the Fidelity Trust Company's building, not yet completed, from designs by Green & Wicks. A red brick of good color laid up in Flemish bond in white mortar makes a simple wall surface of excellent texture.



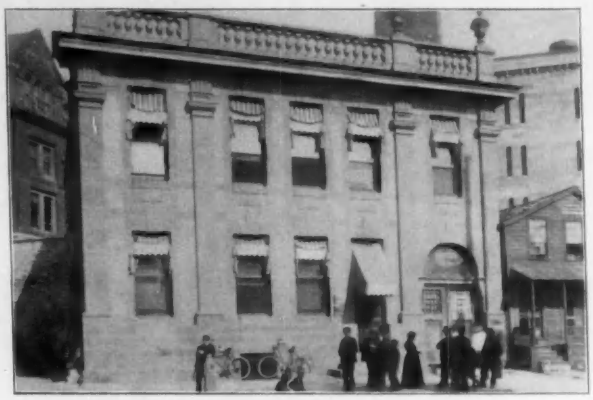
MAIN ENTRANCE, LAFAYETTE HIGH SCHOOL.
Esenwein & Johnson, Architects.

The Chapin building, designed by E. A. Kent, shows some interesting brickwork in a light buff Roman brick.

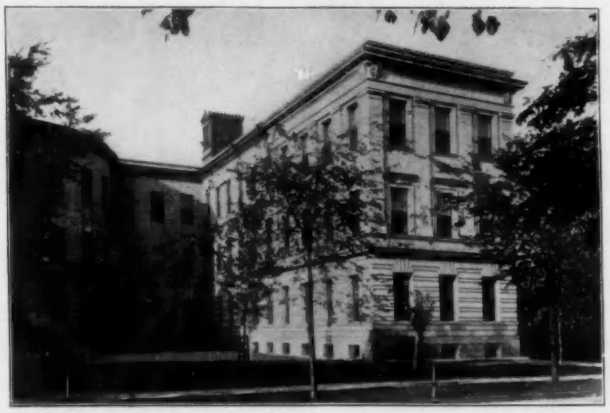
The Palace Arcade, designed by Green & Wicks for Mr. George B. Mathews, is an interesting example of light golden Roman brick with plenty of variation.



PUBLIC BATH. Lansing & Beierl, Architects.



MORGUE. Lansing & Beierl, Architects.



BUFFALO GENERAL HOSPITAL. George Cary, Architect.

UNIVERSITY OF BUFFALO. George Cary, Architect.

WELCOME HALL. Green & Wicks, Architects.

BUFFALO CATHOLIC INSTITUTE. Metzger & Greenfield, Architects.

CASINO AND BOATHOUSE. Green & Wicks, Architects.

PALACE ARCADE. Green & Wicks, Architects.

BRICKWORK IN BUFFALO, N. Y.

AMERICAN EXPRESS COMPANY'S BUILDING.
E. H. Kendall, Architect.

CHEMICAL NO. 5.
E. A. Kent, Architect.

MILLER STABLES.
Lansing & Beierl, Architects.

CHAPIN BUILDING.
E. A. Kent, Architect.

DETAIL, J. N. ADAM BUILDING.
Green & Wicks, Architects.

GRATWICK LABORATORY, UNIVERSITY OF BUFFALO. George Cary, Architect.

MAIN ENTRANCE, UNIVERSITY OF BUFFALO. George Cary, Architect.

DENTAL SCHOOL, UNIVERSITY OF BUFFALO. George Cary, Architect.

GLENNY BUILDING.
Green & Wicks, Architects.

BRICKWORK IN BUFFALO, N. Y.

ST. VINCENT'S FEMALE ORPHAN ASYLUM.
Green & Wicks, Architects.

DETAIL, CHAPEL, ST. VINCENT'S.
Green & Wicks, Architects.

MAIN ENTRANCE, ST. VINCENT'S. Green & Wicks, Architects.

BUFFALO PUBLIC LIBRARY. Cyrus Eidlitz, Architect.

GROSVENOR FREE LIBRARY. R. A. Waite, Architect.

FIRST BAPTIST CHURCH. R. A. Wallace, Architect.

CHURCH OF THE MESSIAH. Green & Wicks, Architects.

FIRST CONGREGATIONAL CHURCH. C. D. Swan, Architect.

BRICKWORK IN BUFFALO, N. Y.

The American Express Company's building is an excellent example of brickwork of good character, from plans by E. H. Kendall.

An interesting combination of golden Roman brick and white glazed terra-cotta is shown in the detail of the J. N. Adam building, designed by Green & Wicks.

The Miller stables, from plans by Lansing & Beierl, is an interesting example of red brickwork.

More of Buffalo's churches are of stone than any other class of buildings. The later ones, however, are of brick.

The Church of the Messiah, from plans by Green & Wicks, shows some beautiful brickwork in light golden shades, Roman brick of good color and excellent variety of tone having been used.

One of the modern ideas in church architecture is shown in the spireless First Baptist Church, in which a pleasing light golden Roman brick of excellent texture and good variety of tone was used.

CHURCH OF THE DIVINE HUMANITY.

He is, in truth, a dull man who never takes time to smile, and a good laugh is excellent medicine. So the Church of the Divine Humanity is offered, with due apologies to the architect, whosoever he may be, to furnish good and sufficient provocation for at least a smile. When this church was being built a description, most carefully and laboriously prepared, was published in the local papers, and an extract is now quoted on the principle that when one runs across a good thing it should be passed along.

"The building is constructed with a skeleton framework of built-up timbers formed and interlocked in such a manner as to make it exceedingly strong. It is composed of dry scantlings and plankings dressed to uniform size and doweled together with wire nails. This frame is covered with matched plankings, dressed, forming the interior wall finish. This is covered externally with damp-proof felting and faced with an epidermis of pressed-brick work anchored to this wood framing, . . . and is considered a better non-conducting jacket than the ordinary stone or brick wall."

# Fire-proofing.

## The Johnson System of Floor Construction.

BY PETER B. WIGHT.

THE progress of economic fire-proof floor construction has of late years taken the direction of an endeavor to do away with I beams as far as possible. The modern fire-proof building consists of an exterior wall of any approved material and construction, and an interior carried on the requisite number of steel posts. It is divided into rectangles by these posts which stand at their corner intersections. These interior posts stand at distances apart in both directions which are the result of a just compromise between the exigencies of the plan and the method to be employed in the floor construction. Up to this point the construction of fire-proof buildings is practically uniform because interior dividing brick walls have been practically abolished.

In determining what system of floor construction to employ a departure may now be made in at least three directions. The time-honored system of girders in one direction, to take the whole weight of the floors, crossed by I beams in the opposite to support fillings between them, is generally used. In this the beams also carry the whole weight of the floors, while the fire-proof filling carries mainly the weight between the I beams, though acting as a stiffener in both directions. This system admits of long bearings for girders and wide spaces between them spanned by the I beams which range up to about twenty-four feet. It is the most extensive of the systems now used.

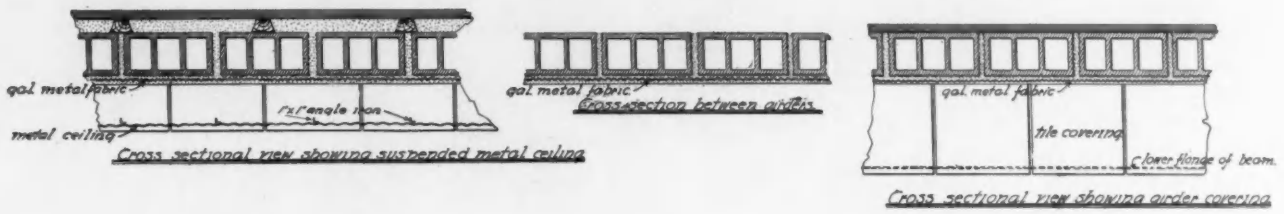
Another system admits all the girders and I beams, and introduces struts from column to column in both directions, which are not subjected to transverse strains but act both in tension and compression according to circumstances. The remainder of the floor construction consists of a laminated domical arch of slight elevation, made of hard tiles, the thrust and weight of which are carried directly to the steel posts. This is known as the Guastavino or timbrel construction, and has already been described in THE BRICKBUILDER (see issues of April, May, September and October, 1901). It has been used for floor subdivisions up to 19 x 25 feet.

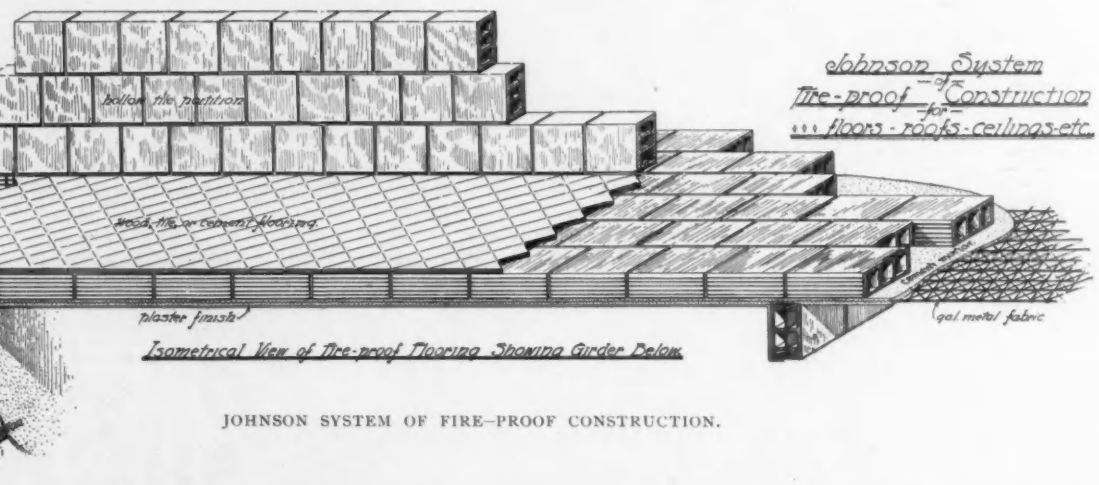
A third method retains the steel girders and seeks to do away with the I beams entirely, only retaining small I beam struts between the columns in opposite directions to the girders, for maintaining the rigidity of the steel skeleton. This method has been the occasion for a vast amount of experimentation during recent years. The possibility of doing away with the expensive I beams entirely and still preserving the flat ceilings has been too great a prize to escape the observation of inventors, and grievous have been the blasted hopes of some who have failed in the attempt to solve the problem. It is the object of this article to give some account of one of the solutions of it, which is also the most recent and practicable.

After an experience of twenty years in doing every kind of fire-proof work with burned clay, Mr. E. V. Johnson of Chicago became convinced of the practicability of

doing away with much of the steel that had previously been used in floor construction, even though he had seen many others fail in the attempt. It was purely a question of economics with him. If he could build as good a floor without I beams as with them he would be satisfied; otherwise he would still advocate the old methods. For no one disputes that the floor constructions with I beams spaced from four to eight feet and filled with flat hollow tile arches of porous or semi-porous burned clay are still the standard constructions for fire-proof buildings of all kinds. Side construction flat arches had been safely

It was about four years ago, when Mr. Johnson conceived the idea that the resistance to compression of hard-burned tiles and Portland cement concrete could be united in a nearly homogeneous body, that he commenced his experiments. If he could succeed in this he would have an advantage over all cement constructions by saving a large amount of weight at the neutral axis by the amount of the hollow spaces within the tiles. He also decided to make the floor practically monolithic by using the concrete in such a way that every tile would be surrounded by it, thus making a decided advance by not




JOHNSON SYSTEM OF FIRE-PROOF CONSTRUCTION.

built up to spans of ten feet. Then came the experimentation with end construction tiles which dates from the Denver tests of 1890. These flat arches developed such an amount of superfluous strength, as compared with the transverse strength of the I beams with which they were used, that attention was directed to developing this into systems of floor construction which would admit of such great spans that the arches could be turned around and built from girder to girder provided their distances apart were within practicable limits. Several inventors were at work at it ten years ago. Not only had the enormous strength of hard-burned tile to resist compression been discovered, but concrete made of the highest grades of Portland cement was in favor with some inventors, who used various forms of steel for the tensile member.

relying wholly upon the cement joints between the ends of the tiles to resist all of the compression. He found by tests that the contact between the side of a tile and good cement would resist more than an end joint between the narrow edges of the tiles. Besides, he was able to lay all the tiles breaking joints, which had not been found to be practicable with end pressure flat arches. The result was that he abandoned all idea of the flat arch with skew backs and substituted for it a monolithic plate of the hardest material that could be made, capable of the greatest compression at the top, reënforced with tension members of steel placed beneath the tiles, and bedded in concrete which became attached to the underside of the hollow tiles. This system called into use the hardest kind of tiles, to which no objection could be made on account of brittleness

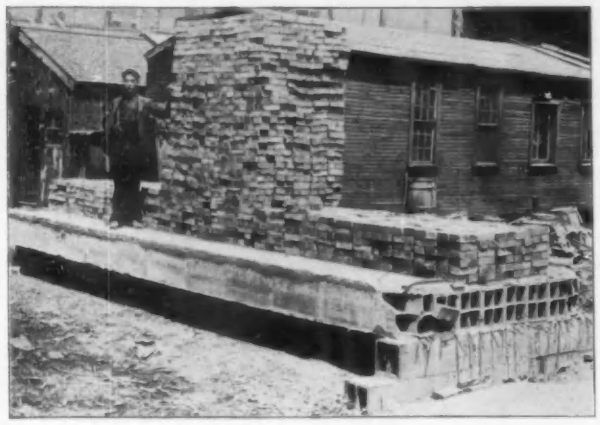


FIG. 1. TEST OF JOHNSON SYSTEM OF FLOOR CONSTRUCTION AT AKRON, OHIO, JULY, 1898.

because they are covered at top and bottom with thick beds of cement.

His first experiments were made at Chicago in the spring of 1898, and were carried out on a larger scale in July of that year at the factory of H. B. Camp at Greenstown, Ohio.

He built an experimental section of floor at Akron, Ohio, in May, 1898. It had a clear span of 20 feet, which was uniformly loaded with 500 pounds per superficial foot. As a result he received the contract for all the floors in the Hamilton office building in that city. The first public test of this invention was made on the site of the Hamilton Building in July, 1898. (Fig. 1.) Work on the building was commenced March 15, 1899, under the direction of Mead & Garfield, architects, Cleveland, Ohio. The architects, under the advice of a well-known engineer, declined at first to take any responsibility for the work, but it is to the credit of Mr. Christy, president of the Hamilton Building Company, to say that he had faith in it, and the work was carried on to completion. Of the floors in this building the architects say: "The fire-proof floors in the Hamilton Building at Akron have given perfect satisfaction in every respect. The average span between bearings is 17 feet 6 inches, and in several cases spans of 19 feet in the clear were built. This work was finished during the summer of 1900, and upon recent inspection of the work we find the ceilings in perfect condition, no cracks or deflections of any kind having appeared. These floors were severely tested during the erection of the work, and we have no hesitancy in recommending the system as first class in every particular."

The general interior construction of the Hamilton Building is with 15-inch I beam girders 17 feet 7 inches apart carried on cast-iron columns tied in the opposite direction with 5-inch I beam struts. The floors were built story by story as fast as the walls went up, the floor of each story being laid before the walls of the succeeding story were built. The tiles used were 9 inches deep. First the girders were covered as to their bottom flanges with shoe tiles, on which were laid a course of hard bricks. The floor construction rested on the ledges thus formed and the exterior walls, but not on projecting ledges on the brick walls. The edges of the floors were built into the walls as each successive story was built.

First smooth board centerings were built up from below, and these were covered with oiled paper. On this was laid loosely two thicknesses of galvanized high carbon steel fabric, each made up of longitudinal strands of No. 7 steel four inches from centers, tied together diagonally with No. 14 wire. This provided one No. 7 steel rod for every two inches. Then a bed of a full inch of rich Portland cement concrete was laid over the fabric, burying it from sight, and the 9-inch tiles were set in courses one inch apart, each breaking joints with the next course. The ends of tiles had buttered joints and were set close. Next the spaces between tiles were grouted with rich cement, which was spread over the tiles to a thickness of one inch. On removal of the centering, after leaving the work a few days to set, and taking off the oiled paper, the ceiling exhibits a smooth cement surface which can be finished with one coat of plaster. All the fabric had meanwhile disappeared from sight, the cement having passed around and under it. The fire-proof construction was covered on top with 2-inch floor strips and deafening and double-thick hard-wood flooring.

After giving the work time to harden, each section of the floor was tested. An iron roller weighing 2,290 pounds was used. It was 4 feet in diameter and measured 14 inches on the face. This was rolled over all the floors longitudinally and transversely. (Fig. 2.)

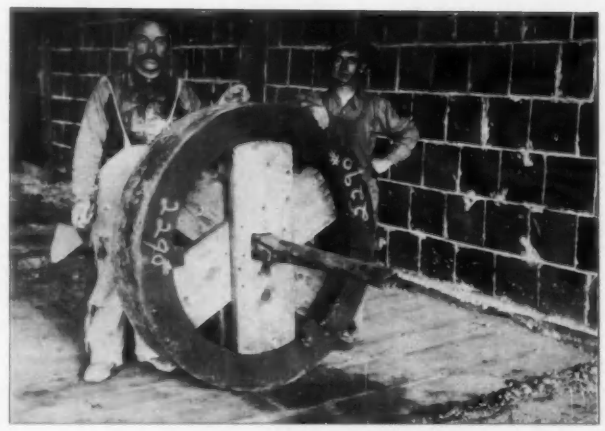


FIG. 2. ROLLER USED IN TESTING FLOORS OF HAMILTON BUILDING, AKRON, OHIO, BEFORE TILES WERE COVERED WITH CONCRETE.

The above description of the first building in which this floor system was used will suffice for all that succeeded it.

In 1901 the Pioneer Fire-proofing Company of Chicago, acting under Mr. Johnson's patents, built all the floors of the Otis apartment building at Woodlawn and Lake avenues, Chicago, the same being 17 feet 6 inches span. The roofs of the United States government building at Chicago are now being built in the same manner.

The largest piece of work on this principle that has been executed is in the New Gayosho Hotel at Memphis, Tenn., designed by M. E. Bell, formerly Supervising Architect of the Treasury Department, which was built to replace one destroyed by fire in 1901. Mr. Bell says of it: "The floors were adopted subject to a test of 200 pounds per square foot, on spans of 17 feet. Since their

construction they have proved to be all that was claimed for them, and we are more than satisfied with their strength and perfect fire-proof qualities."

A public test of the Johnson floor construction was made at Minneapolis, August 7, 8 and 9, 1901, under the direction of Prof. W. R. Hoag, C. E., of the University of Minnesota, James G. Houghton, Inspector of Buildings at Minneapolis, and Harry W. Jones, architect.

FIG. 3. PUBLIC TEST OF JOHNSON FLOOR CONSTRUCTION MADE AT MINNEAPOLIS, AUG. 7–9, 1901, AS REPORTED BY PROF. W. R. HOAG.

(See Fig. 3.) A section of floor was built which according to the reports made by Mr. Hoag was 16 feet square independent of the supports, which were dwarf walls built of 12-inch hollow tiles. The floor was supported on all four sides, and overhung the supports 4 feet on two sides. It was built like a plate on top of the walls without abutments. The temporary platform and oiled paper having been laid, a half inch of Portland cement mortar was spread. Three eighths inch steel rods were laid 3 inches apart and a half inch of cement mortar spread over them. One course of steel fabric as heretofore described was laid over this with the heavy wires in the direction of the steel rods, and another crosswise. On this were set courses of 8 x 12 inch hollow tiles on edge ¾ inch apart, with butt joints in each course, and afterwards grouted and plastered over with a thin coat of Alpha Portland cement four to one. The floor was about 13 inches thick. With a distributed load of sand bags equal to 378 pounds per superficial foot, which it required two days to place, the deflection was $\frac{3}{64}$ of an inch. On the third day the load was increased to 750 pounds per superficial foot and the total deflection was $\frac{13}{32}$ of an inch. The test was not continued beyond this point and a photograph shown in the illustration Fig. 3 was taken. No evidence of failure was seen. The conclusion of Mr. Hoag's report is as follows:

"The test has proved conclusively that as an engineering structure it is a scientific assembling of material which secures at once great strength and remarkable rigidity, and under this length and depth of span will safely hold 150 pounds per square foot and give a factor of safety of five. As to how much more this system will sustain, or how much lighter it may be made and yet safely carry this load, will require further experiments to determine."

It will be observed that in the above test the floor was supported on all sides and one course of wire fabric was bedded transversely.

On the 10th and 11th of November, 1901, a test was made by James G. Houghton, Commissioner of Buildings of Minneapolis, of a section of floor 16 x 16 feet in the clear built alongside of that last described. In this floor the straining members consisted of ⅜-inch steel rods and one course of steel wire fabric imbedded in 1¼ inches of Alpha Portland cement mortar, and similar tiles, 8 x 12 inches in dimension, were laid on their flat sides. Then three inches of Portland cement concrete was laid over the whole, forming the main compressive member. This concrete was made of four of cinders, three of sand and one of cement. The following extract is from the signed report of Mr. Houghton:

"The load was applied gradually in the shape of bags filled with sand weighing 115 pounds each piled up in separate piles of six with a space of 6 inches between same, sixteen of these piles to the floor surface, making ninety-six bags per tier. Seventeen tiers in height were placed on the floor, giving a total load of 187,680 pounds, or 733 pounds per square foot.

RESULT.

"The effect of the load as gradually applied resulted as follows:

| | | |
|---|---|---|
| 350 pounds | Deflection | ⅛ inch scant |
| 733 pounds | " | ¼ inch full" |

FIG. 4. TEST MADE AT MINNEAPOLIS, NOV. 10, 1901, BY JAMES G. HOUGHTON.

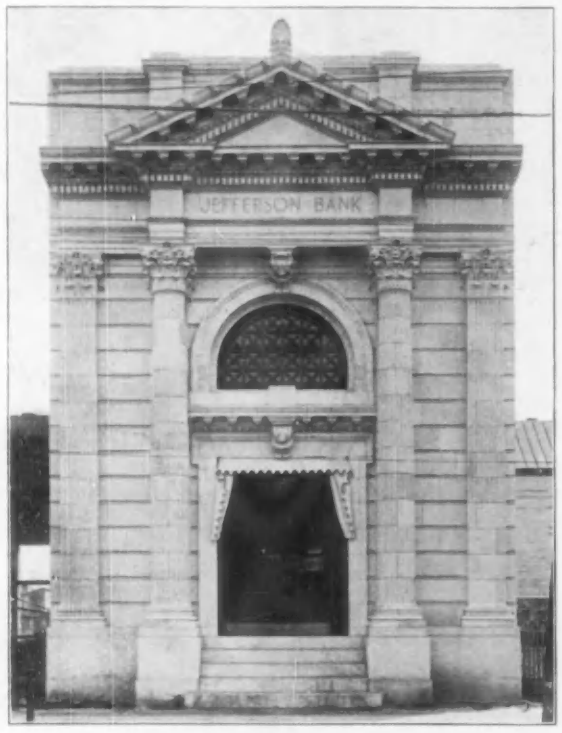
Fig. 4 is from a photograph taken after the load of 733 pounds per superficial foot had been applied.

Floors similar to the last described are now being built in the Methodist Episcopal Deaconesses' Hospital and Home at Minneapolis, where I have seen the work in progress. In these floors 8 x 12 x 18 inch long tiles are used in the rooms, which are 18 feet wide, and 6 x 12 x 18 inch long tiles are used in the corridors, where they rest on I beams crossing the same. They do not touch the corridor walls, a space being left on each side for the heating and ventilating flues. Two courses of steel fabric in one direction and no rods are used; in the rooms the floors rest on the brick walls, and no beams are used. Edwin P. Overmire of Minneapolis is the architect.

# Selected Miscellany.

## BABYLONIAN FAIENCE.

VISITORS to the Museum of the Louvre are familiar with the extraordinarily interesting collection of enameled or glazed wall tiles from Nineveh, Khorsabad and other Babylonish cities. There has recently come news of the discovery on the site of what is assumed to be the Babylonian palace of Nebuchadnezzar, of a quantity of encaustic tiling which in fineness of glazing and coloring seems almost perfect. While the other materials entering into the construction of this palace have crumbled into dust, the bricks and burnt clay products alone appear




JEFFERSON BANK, NEWPORT NEWS, VA.
P. T. Marye, Architect.
Entire Front of Terra-Cotta, executed by Perth Amboy Terra-Cotta Company.

to have survived their centuries of burial, and in many cases their colors and even the surface of the enamel is as fresh as much of our modern work which is less than a year old. It was the beautiful, velvety surface of these old enamels which first suggested the idea of our modern dead-finish faience.

DETAIL BY JOSEPH EVANS SPERRY, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

## A PECULIAR AND INTERESTING TEST OF BURNT CLAY FIRE-PROOFING.

To the Editor The Brickbuilder:

In experimenting lately to find whether porous hollow brick could not be utilized for heating purposes, in view of the prohibitive cost of coal at present, I found that a porous hollow brick of Haverstraw size (8 x 3¾ x 2¼ inches) would absorb in a few seconds enough kerosene oil to give out when ignited a bright flame and great heat lasting about thirty minutes. When the flame had exhausted itself I plunged the brick into a pail of water to cool, and, soaking it again in the oil for a few minutes, was able to relight it and continue the process

RAILWAY STATION, MARION, IND.
W. S. Kaufman, Architect.
Built of Hydraulic-Press Brick. Roofed with American S Tile.

indefinitely without the slightest injury to the brick barring blackening of its surface.

Taking an old cylinder stove, I placed one of the bricks inside of it standing on end, and lighting it, soon had the stove red hot. By having a relay of these bricks at hand, one could secure a continuous fire at a very slight cost.

While tests of fire-proofing material again seem to be the order of the day, surely the above should demonstrate that porous terra-cotta is indestructible by ordinary means, being able to withstand unharmed the alternate application of great heat and cold.

Yours truly,
A. Muller.

New York City, Oct. 10, 1902.

DETAIL BY WINSLOW & BIGELOW, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

## IN GENERAL.

Everett & Mead were the architects of the original Runkle School Building, illustrated in the plate form of The Brickbuilder for September. Peabody & Stearns were the architects of the new buildings A and B.

D. Everett Waid has been commissioned supervising and consulting architect to the Bond and Mortgage

DETAIL BY CHARLES EDWARDS, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

DETAIL BY F. B. & L. L. LONG, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

Division of the Metropolitan Life Insurance Company of New York City.

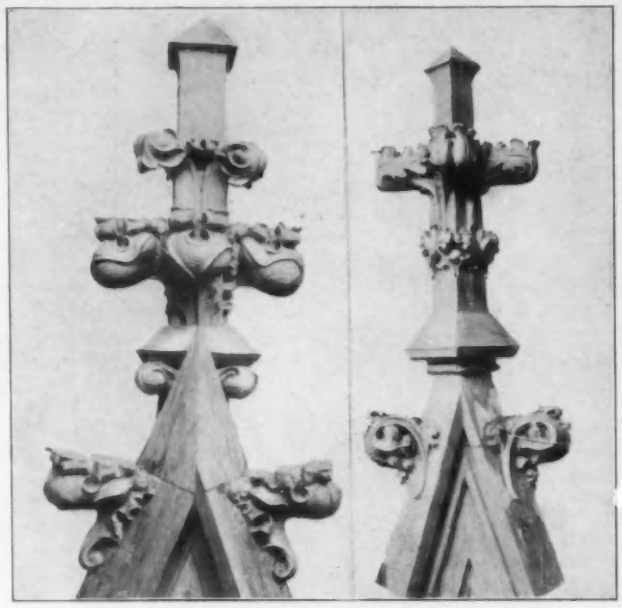
The Akron Star-Brand Cement, made by the Union Akron Cement Company of Buffalo, has been manufactured for more than sixty years. It is not only very strong, but is also very adhesive and clings with great tenacity to any material with which it comes in contact, and when it once gets hard it never softens or disintegrates, as some cements do, but it continues to increase in strength and hardness until it becomes like a very hard stone. It is very uniform in quality and can be relied upon every time to do good work.

Among the contracts recently booked by Fiske & Co., Boston, are the following: For rough-textured red brick: Long Island City High School, Long Island City, N. Y., C. B. J. Snyder, architect; Public School No. 141, Brooklyn, N. Y.; Public School No. 188, New York City, N. Y.; several blocks of apartment houses, Brookline, Mass., Benjamin Fox, architect; mercantile building, Waterbury, Conn., Curtis & Johnson, architects. For smooth-textured red brick: parochial residence, Mission Church, Boston, J. F. Untersee, architect; blocks of ten apartment houses, Dorchester, Mass., George W. Johnston, architect. For gray brick: Public Library, Shrewsbury, Mass., Barker & Nourse, architects; Old South Building, Boston, A. H. Bowditch, architect; Woman's Club, Boston, C. H. Blackall, architect; India

OTTAUQUECHEE SAVINGS BANK, WOODSTOCK, VT.
William W. Clay, Architect.
The columns are 28 feet long, made in three pieces in the full round. Executed in a dull enamel finish.
Work by the American Terra-Cotta and Ceramic Company.

DETAIL BY EDWIN D. PRESTON, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.

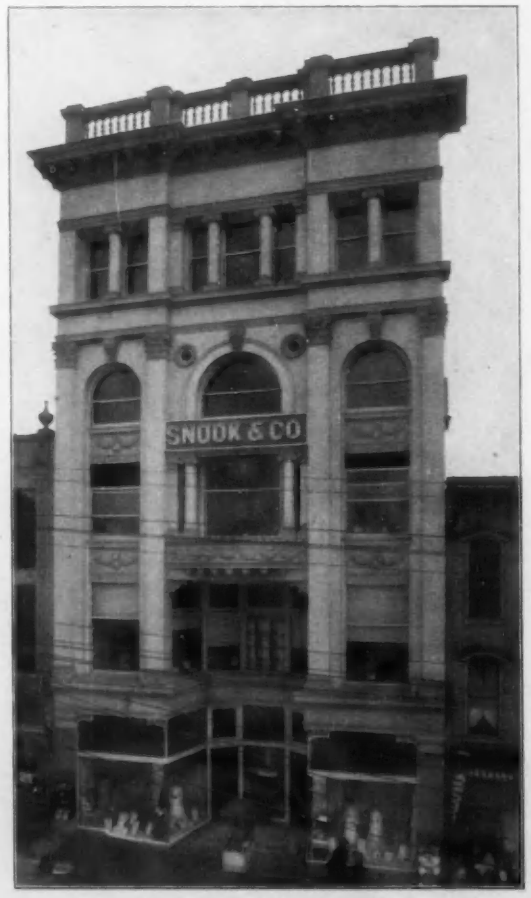
DETAIL BY HERTS & TALLANT, ARCHITECTS.
White Brick and Terra-Cotta Company, Makers.



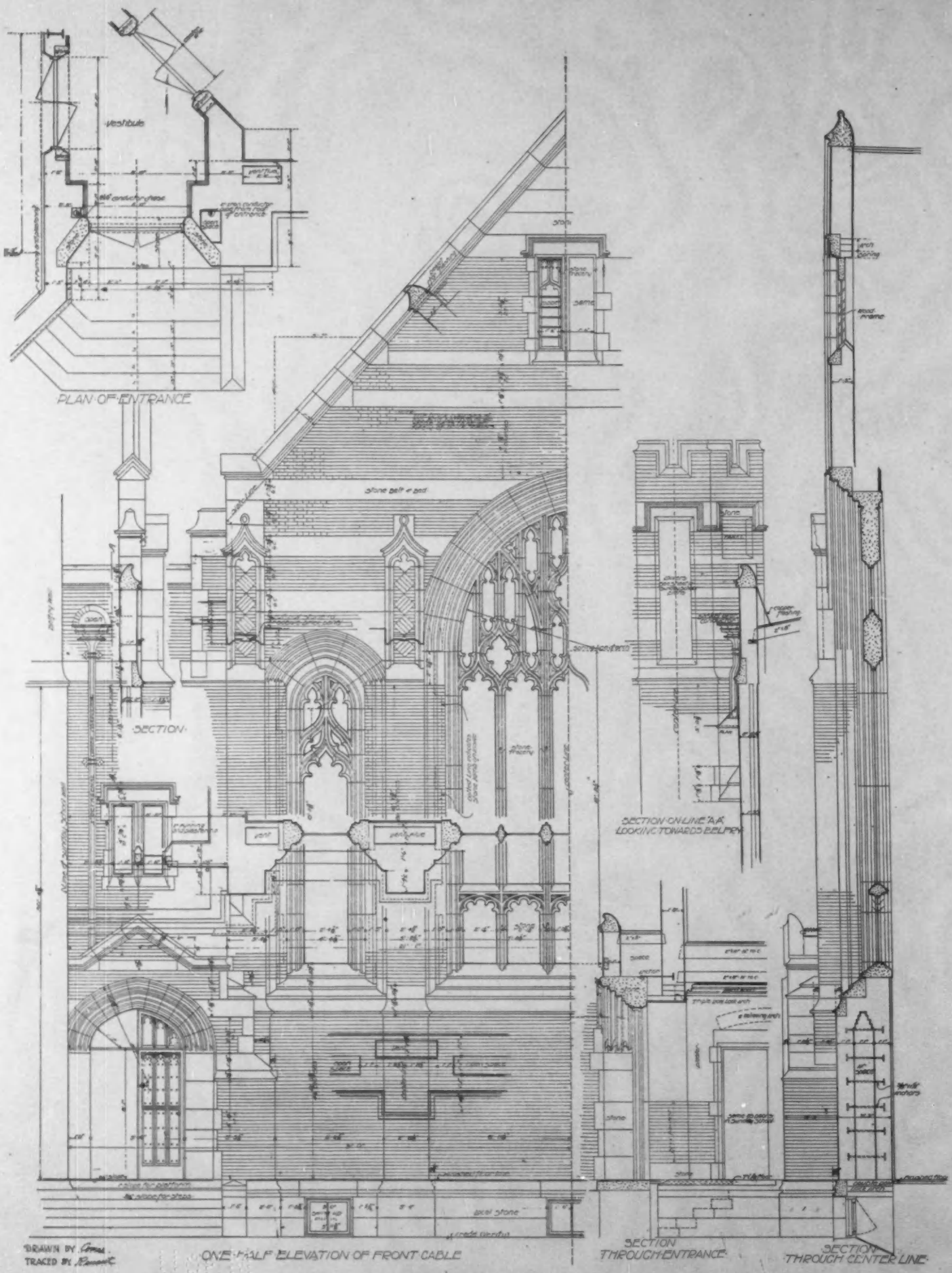
DETAILS BY GEORGE H. STREETON, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

Building, Boston, Peabody & Stearns, architects; Beacon Building, Boston, Goodwin & Siter, architects. For buff and mottled bricks: Summer Hospital for Children, Boston, Charles Brigham, architect; Westfield Hospital, Westfield, Mass., Gardner & Gardner, architects; Clapp Memorial Building, East Weymouth, Mass., J. Sumner Fowler, architect; Hartwell Building, Waltham, Mass., Hartwell, Richardson & Driver, architects; Normal School Dormitory, Westfield, Mass., Gardner & Gardner, architects; Camp Building, Waterbury, Conn., Griggs & Hunt, architects; warehouse, Boston Wharf Company, South Boston, M. D. Safford, architect.

ENTRANCE, BY LOUIS SULLIVAN, ARCHITECT.
Terra-Cotta Work by the Winkle Terra-Cotta Company.



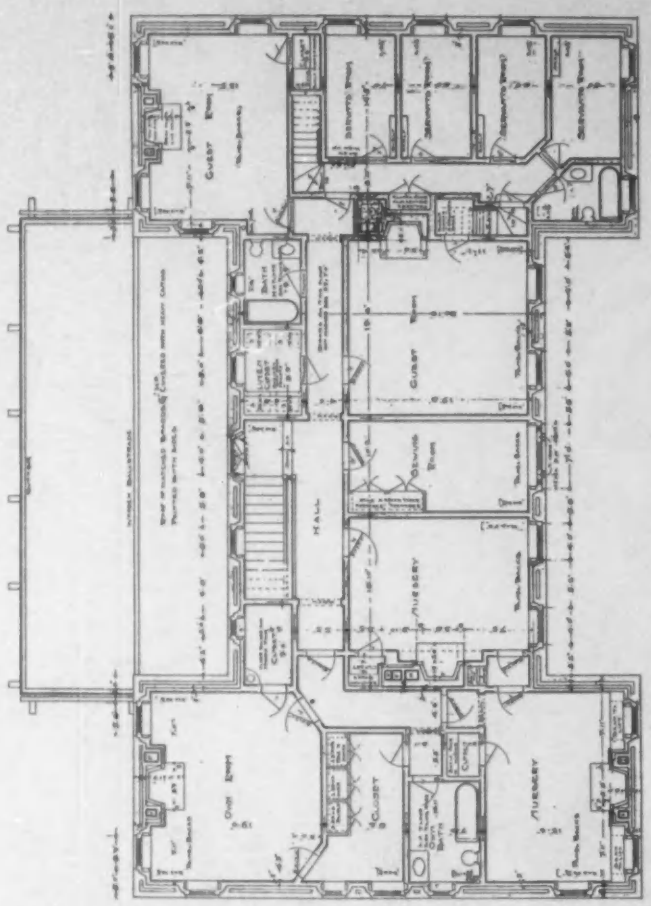

AN ENAMEL-BRICK FRONT, WHEELING, W. VA.,
Gresey & Farris, Architects.
Brick of Cream Satin Finish, Columns of Special Radius Brick. Tiffany Enameled Brick Company, Makers.



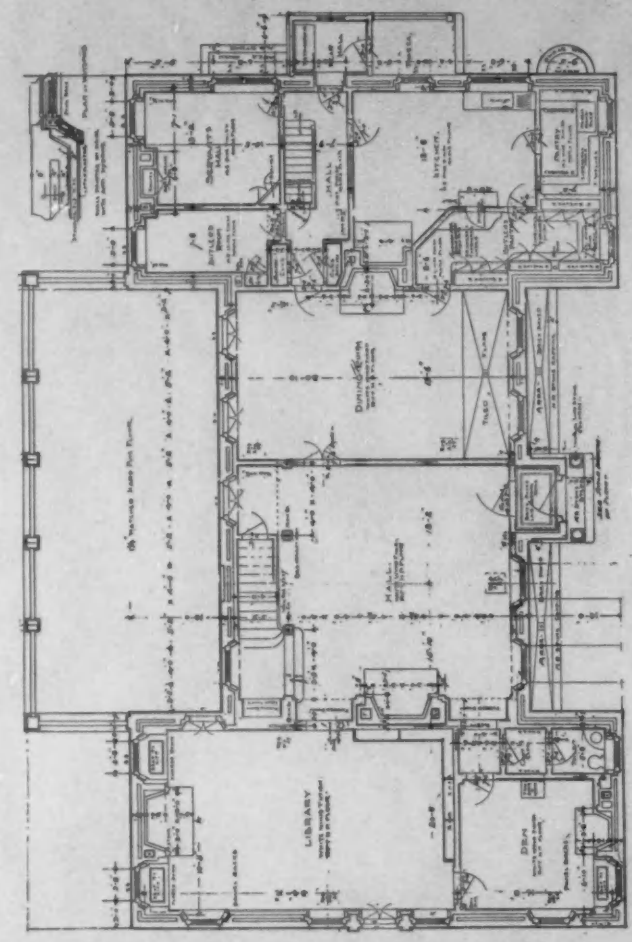

FIRST BAPTIST CHURCH, FRANKLIN, PA.

BEEZER BROTHERS, ARCHITECTS.

M16U



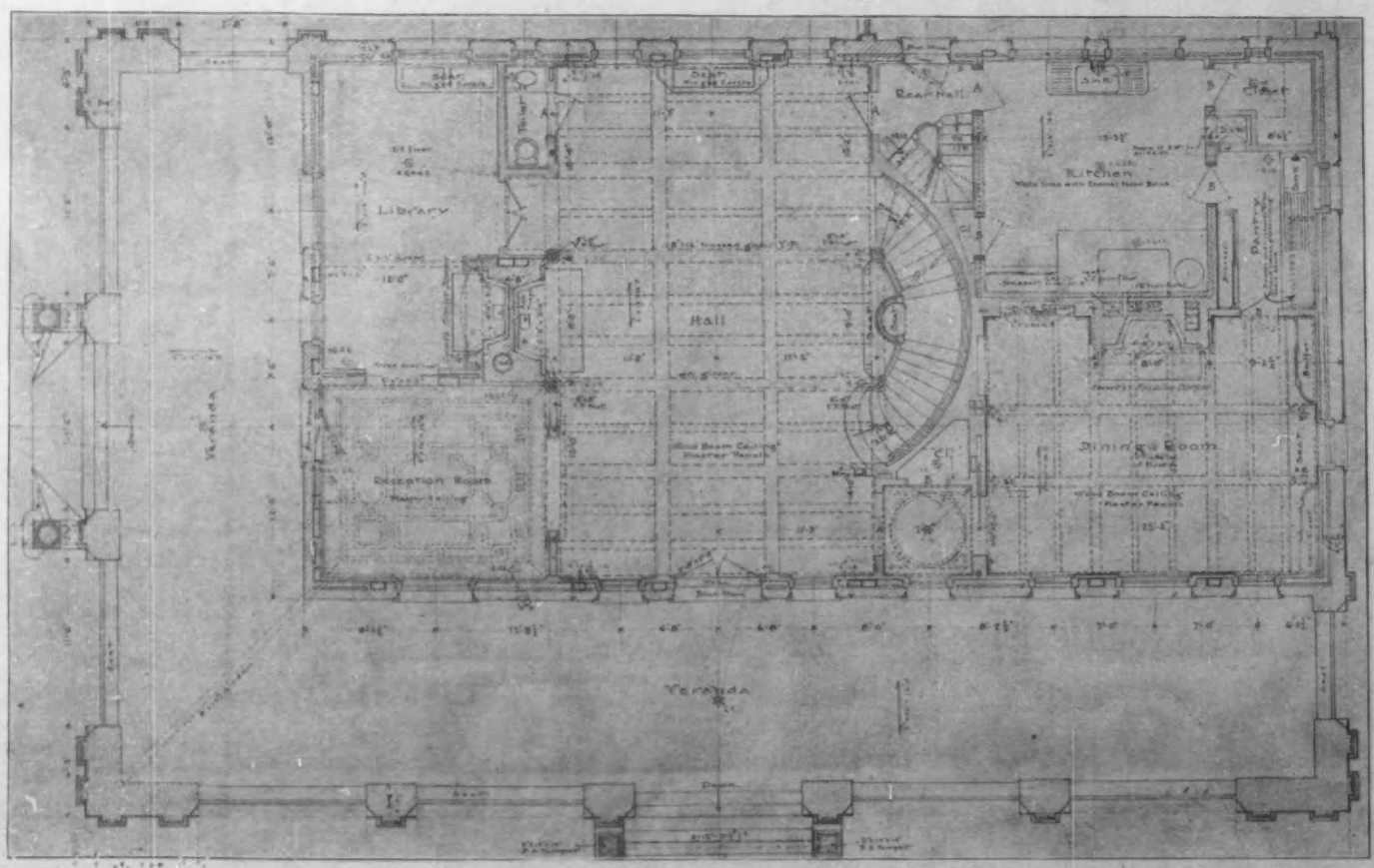
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

HOUSE AT MIDDLETOWN, R. I.

WINSLOW & BIGELOW, ARCHITECTS.

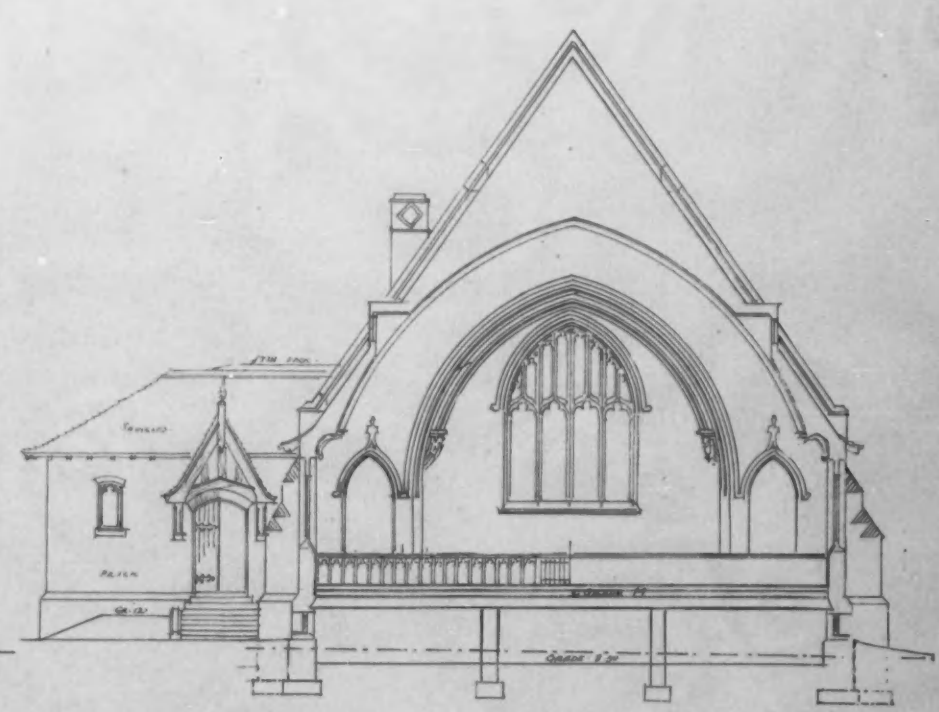



FIRST FLOOR PLAN.

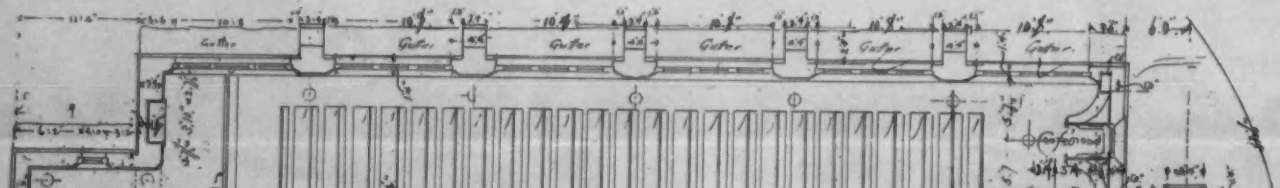
HOUSE AT ALLENHURST, N. J.

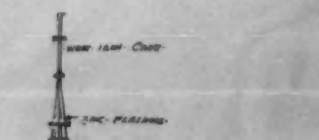
GEORGE K. THOMPSON, ARCHITECT.

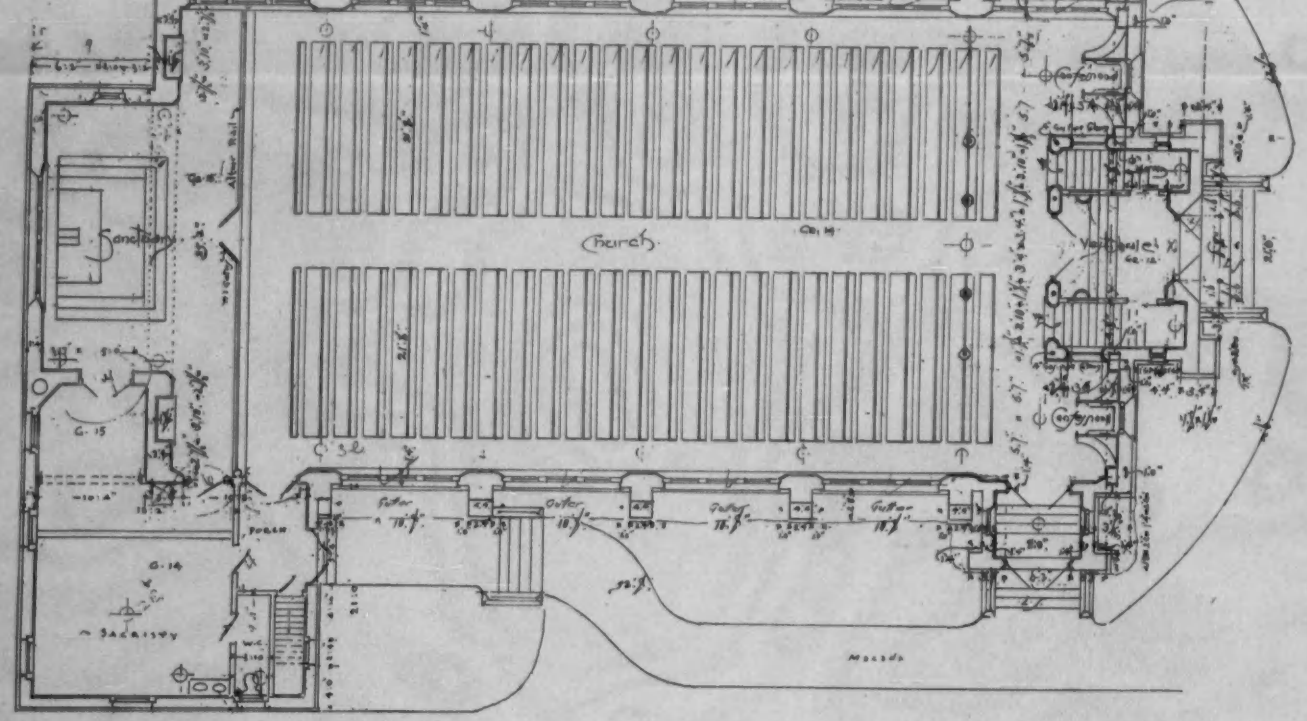
S. W. ELEVATION.



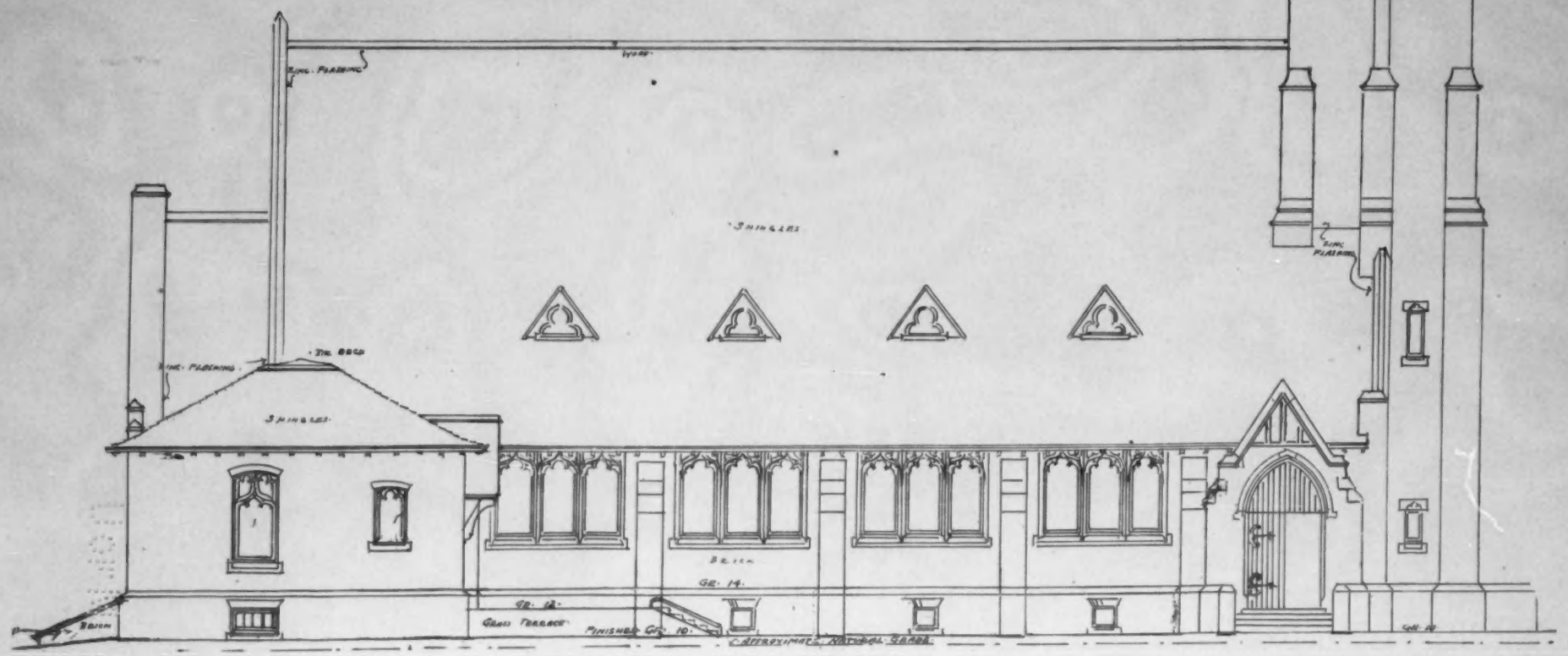
SECTION.







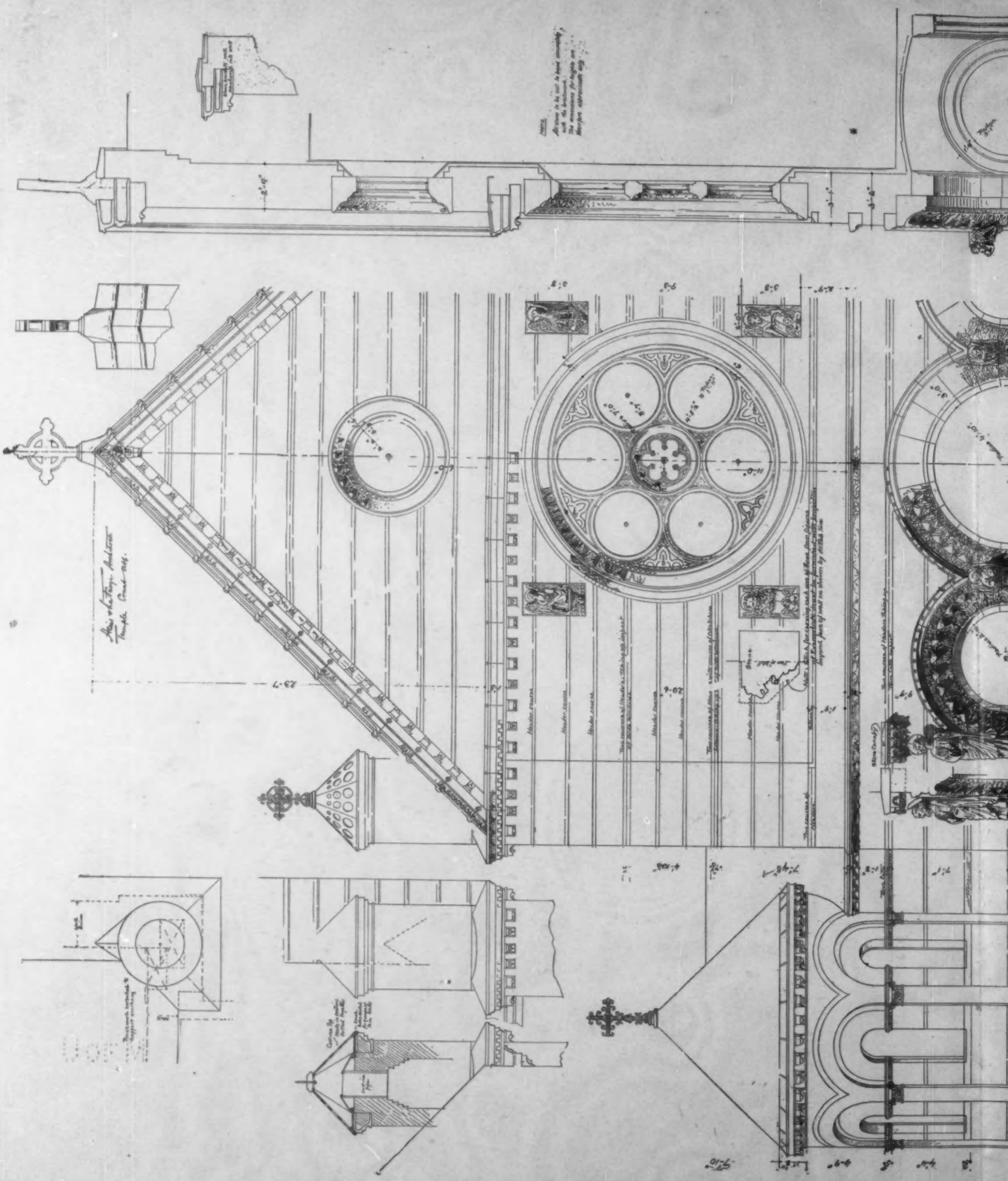

PLAN.

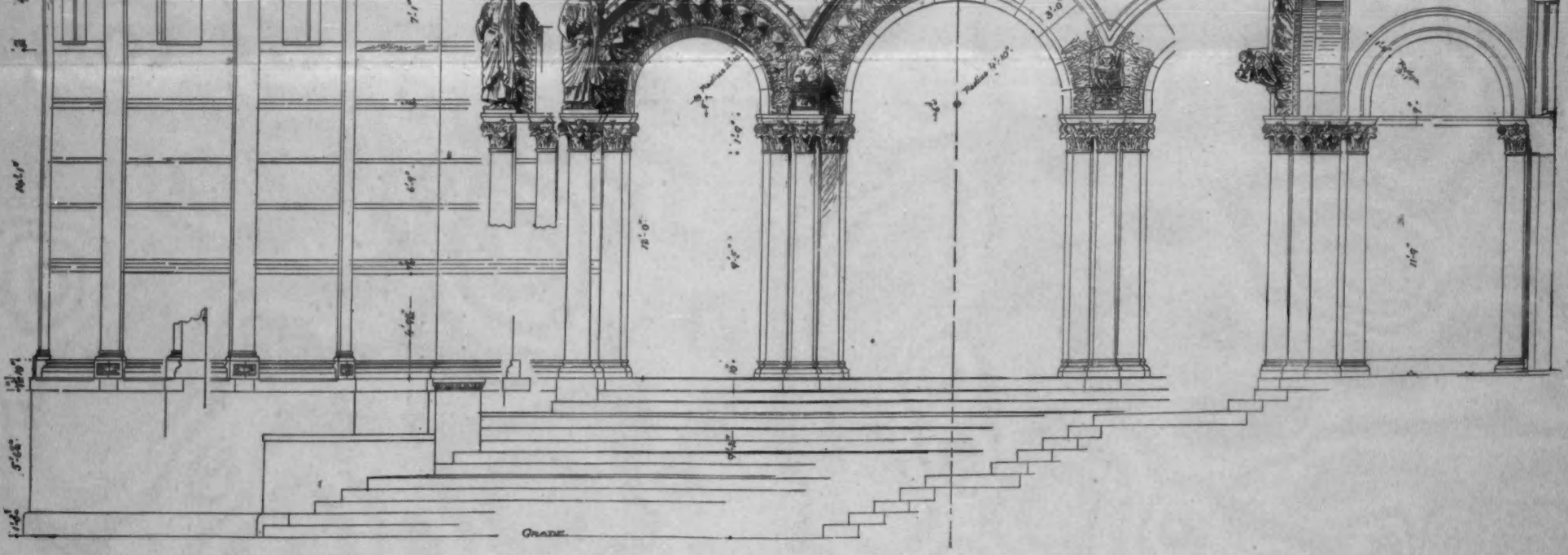



S. E. ELEVATION.

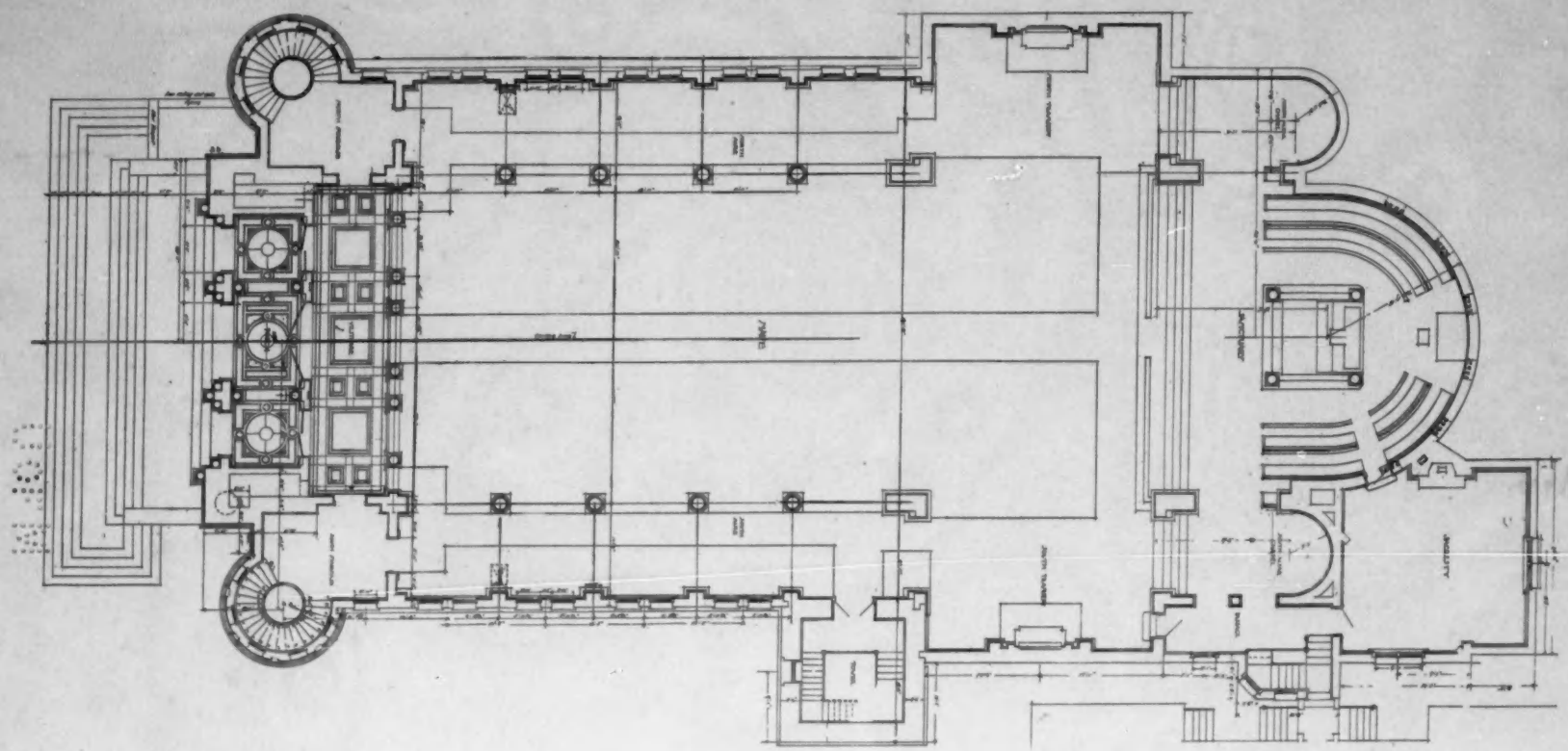
CHURCH AT NORTHAMPTON, MASS.

MAGINNIS, WALSH & SULLIVAN, ARCHITECTS.






DETAILS OF FRONT ELEVATION.

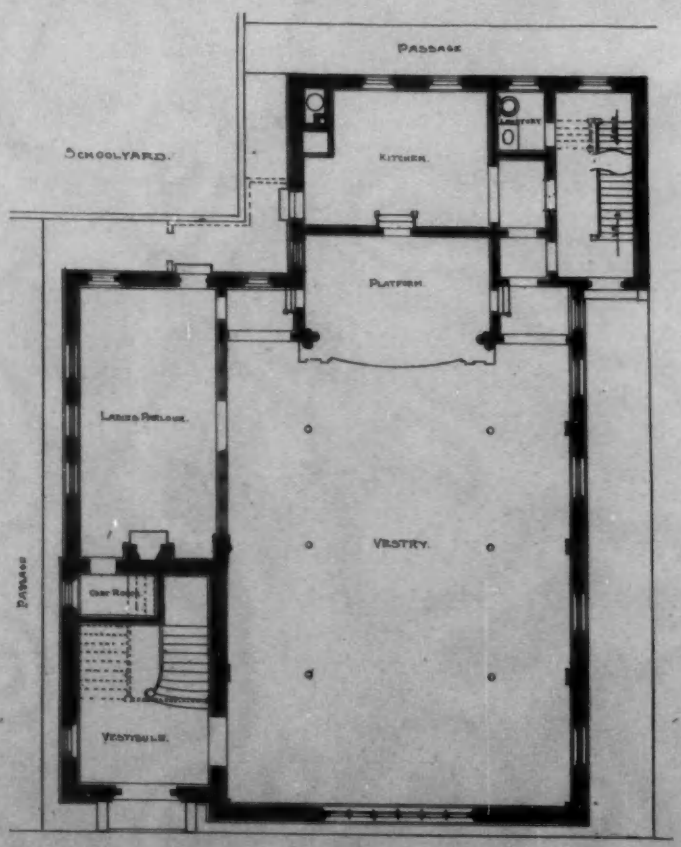


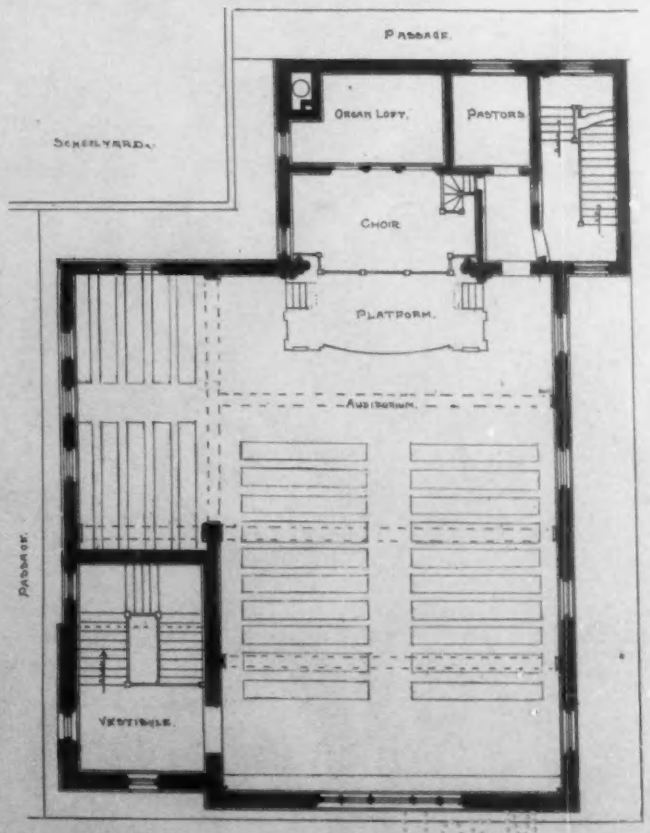
PLAN.

CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I.

HEINS & LA FARGE, ARCHITECTS.

ПРЪЖ

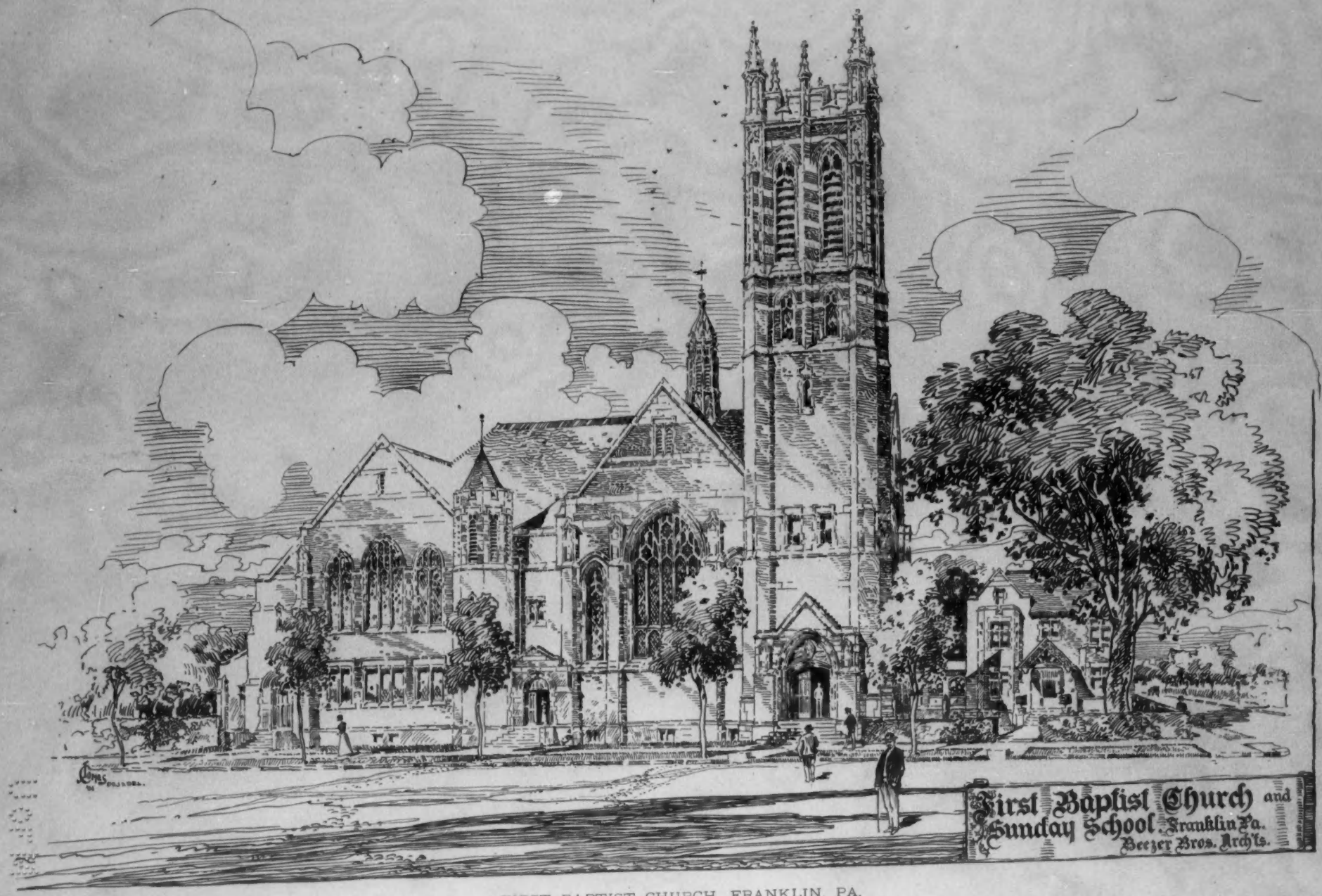



CHURCH FOR FIRST UNITARIAN SOCIETY, EAST BOSTON, MASS.

WALTER ATHERTON, ARCHITECT.

M-oU




FIRST BAPTIST CHURCH, FRANKLIN, PA.

BEEZER BROTHERS, ARCHITECTS.

ПОЛИ-

CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I.

HEINS & LA FARGE, ARCHITECTS.

M360

FRONT VIEW.

HOUSE AT ALLENHURST, N. J.

(RESIDENCE OF PETER FISHER, ESQ., OF SAYRE & FISHER COMPANY.)

GEORGE K. THOMPSON, ARCHITECT.

CHURCH AT NORTHAMPTON, MASS.

MAGINNIS, WALSH & SULLIVAN, ARCHITECTS.

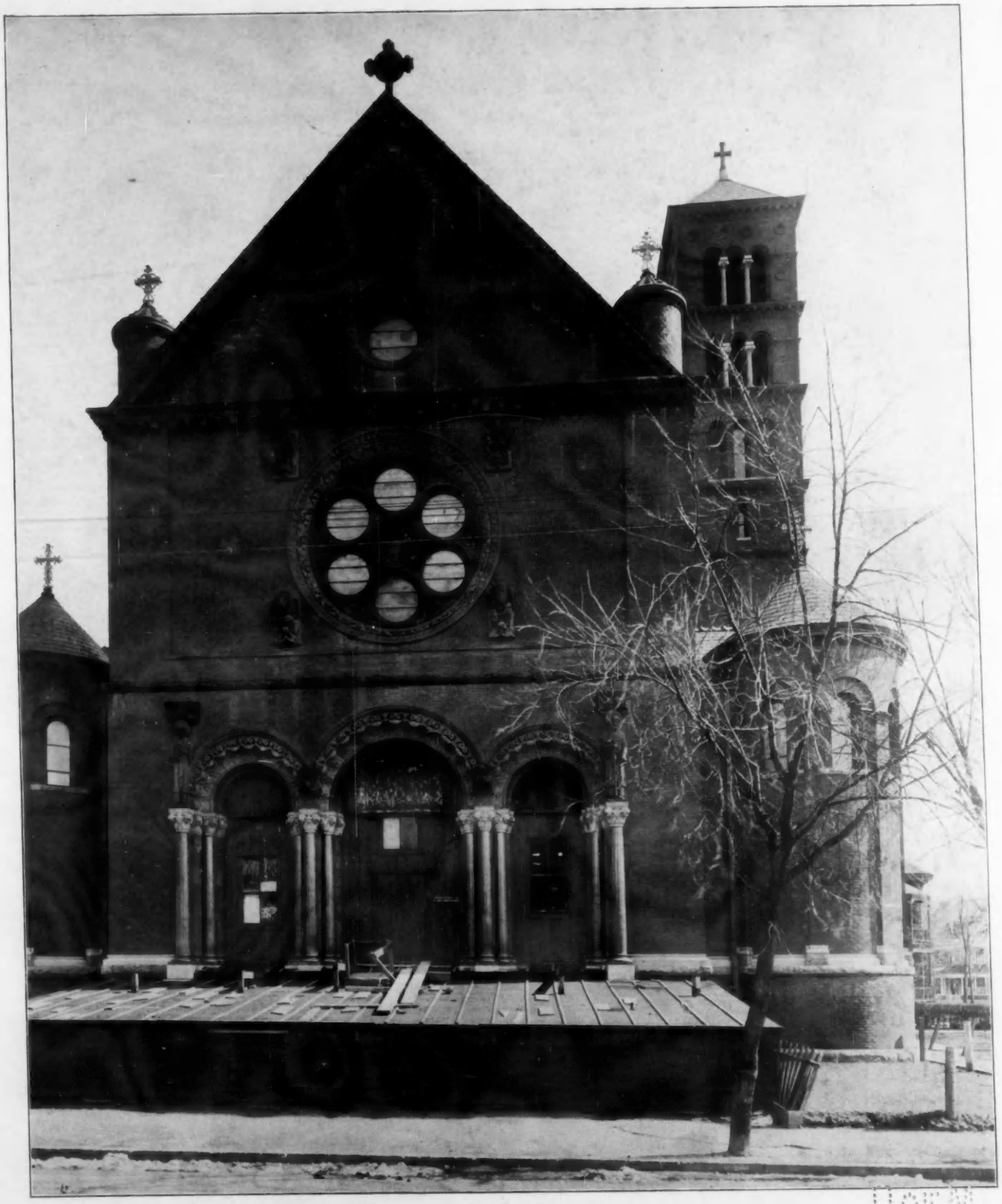
REAR AND SIDE VIEW.

HOUSE AT ALLENHURST, N. J.

GEORGE K. THOMPSON, ARCHITECT.

HOUSE AT MIDDLETOWN, R. I.

WINSLOW & BIGELOW, ARCHITECTS.



CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I.

HEINS & LA FARGE, ARCHITECTS.